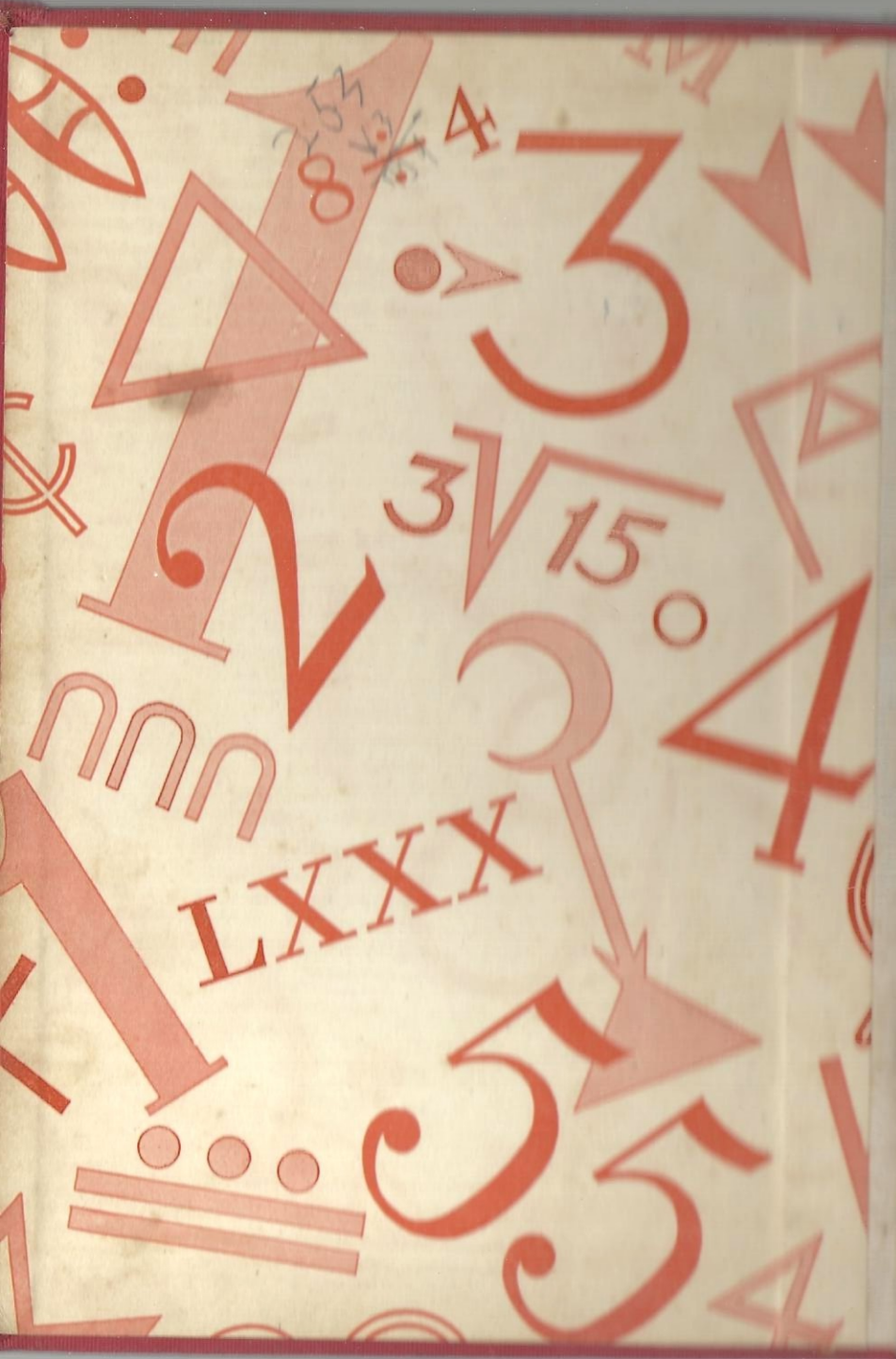
SOCIAL UTILITY ARITHMETICS

BOOK 1

STRAYER-UPTON

WITHOUT ANSWERS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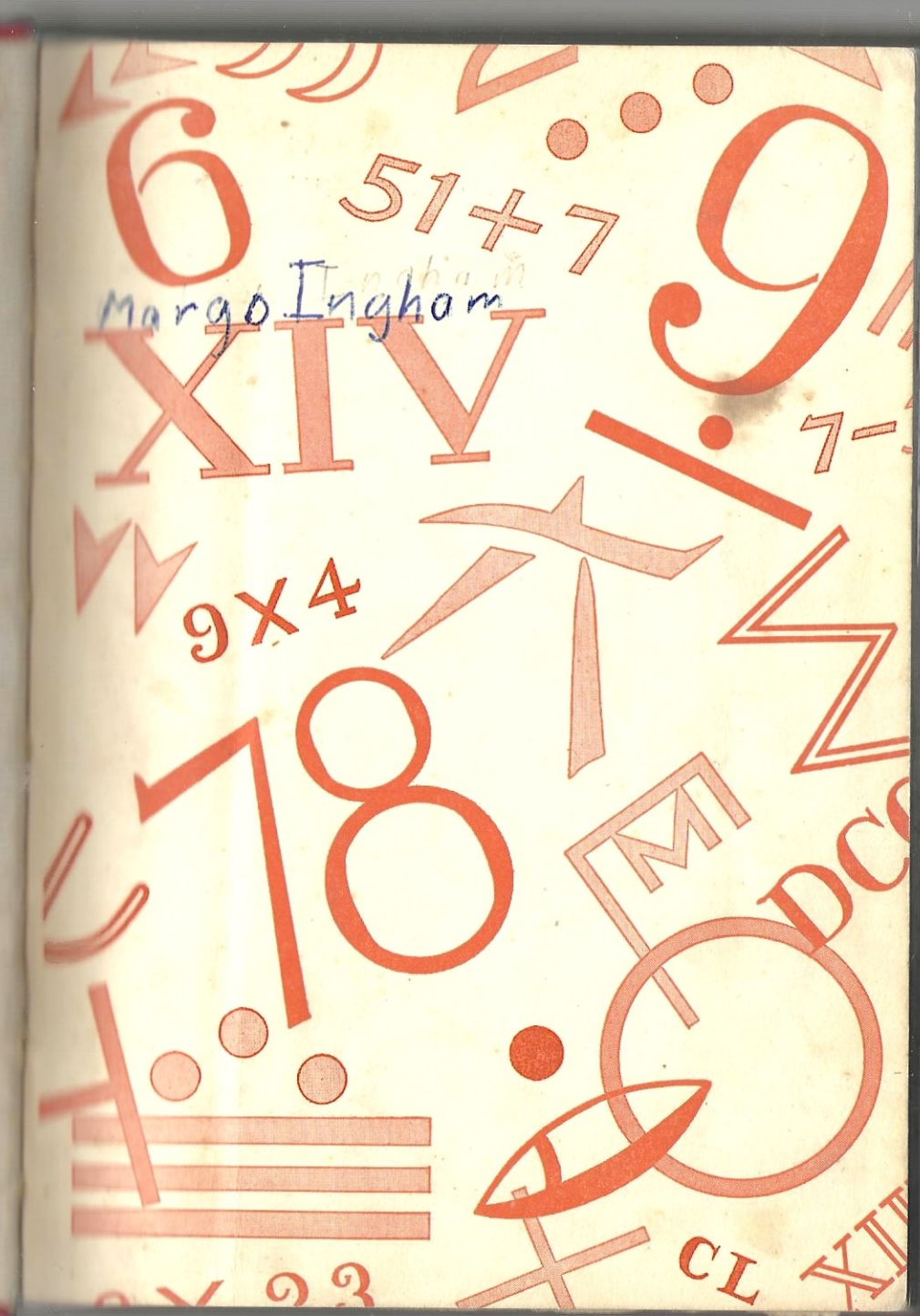
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SOCIAL UTILITY

THINK AND DO SERIES

ARITHMETICS

GEORGE D. STRAYER
CLIFFORD B. UPTON

BOOK ONE

NEW YORK CINCINNATI CHICAGO
AMERICAN BOOK COMPANY
BOSTON ATLANTA DALLAS SAN FRANCISCO

SOCIAL UTILITY ARITHMETICS — BOOK ONE

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PREFACE

1. New Needs. There is a demand to-day in many schools for a course of study in arithmetic in which fewer basic topics are taught in each of the primary grades. This demand has been favored by the crowded curriculum of the elementary school. It has also been influenced by studies on the psychology of arithmetic which have shown teachers that arithmetic consists of many fundamental concepts and skills, each of which requires more time for its full understanding and mastery than has heretofore been realized. By teaching fewer topics each year, it is possible to give more exercises on those topics that are taught, thus assuring their better mastery.

2. **Distribution of Topics.** To meet these needs, the curriculum of Grade 3 in the *Social Utility Arithmetics* limits the work in multiplication to the fundamental facts from the 1's to the 5's, with exercises in short multiplication; and the work in division to the even division facts with divisors of 2 to 5, including easy applications. The remaining work in multiplication and division, including division with carrying, is assigned to Grade 4. Similarly, the usual work in long division with two-figure divisors is postponed until Grade 5 though an optional introduction to this topic is given at the end of Grade 4. Corresponding changes in the placement of topics have been made in Grades 5 and 6.

9. **Problem Solving.** Another feature of this book is its carefully planned instruction in problem solving. In developing the ability to solve one-step problems, the pupil is taught the more important language expressions of arithmetic, these phrases often serving as cues that tell the pupil whether he is to add, subtract, multiply, or divide to get the answer. All problems are expressed in simple language and describe experiences with which young children are familiar.

10. **Problem Tests.** A series of tests on problem solving, arranged in groups, is also given in these books. These tests cover types of problems with which every pupil should be acquainted.

11. **Projects.** This book contains the most carefully prepared collection of projects to be found in any textbook in arithmetic. These projects are simple, wholesome, and natural. They relate to things that *interest* children; they are alive and joyous.

12. **Diagnostic Tests.** These tests provide an exceptionally full and generous program of diagnostic tests, with keyed references to remedial exercises.

13. **Individual Differences.** Full provision has been made for pupils of varying levels of ability. For those of average and below-average ability a large number of well-graded exercises are provided. For pupils of superior ability more difficult exercises, marked with a star (*), are furnished. The diagnostic tests indicate the needs of each pupil and give references to suitable remedial work.

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"Twenty-Seven, Twenty-Eight, Twenty-Nine, Thirty."
Can You Jump 30 Times without Missing?

CHAPTER I

ADDITION AND SUBTRACTION FACTS

HOW FAR CAN YOU COUNT?

1. Mary Ann jumped the rope 30 times without missing. She counted from 1 to 30 as she jumped. Can you count to 30? Try it.

2. Peggy says she can jump 50 times without missing. Count to 50 as Peggy did.

3. John is counting the pennies he has saved. He says he has 24 pennies. Count the pennies on the table. Is he right? yes

4. Count the children in your class.

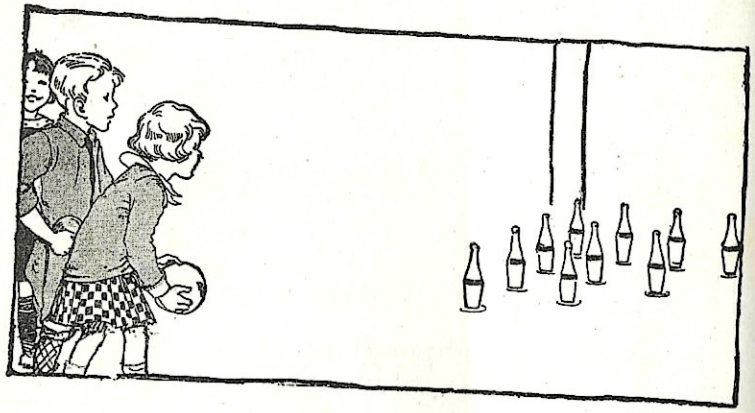
5. Count all the books the teacher has.

6. Count from 1 to 100.

7. Count from 10 to 30. Count from 50 to 70.

8. Try to count backward from 10 to 1.

9. Count by 2's to 20. Count by 2's to 100.



PLAYING TENPINS

These children are playing tenpins.

1. Peggy rolls a ball and knocks down 5 pins; then she rolls another ball and knocks down 3 pins. Her score is 5 and 3. Billy says that this makes 8. Is he right? yes

$$\begin{array}{r} 5 \\ 3 \\ \hline 8 \end{array}$$

The numbers below show how many pins other children knocked down. Find their scores.

2.	4 + 3 = 7	8 + 1 = 9	2 + 3 = 5	1 + 4 = 5	5 + 2 = 7	9 + 1 = 10	7 + 2 = 9	6 + 2 = 8
3.	3 + 6 = 9	1 + 7 = 8	4 + 1 = 5	7 + 3 = 10	3 + 4 = 7	4 + 5 = 9	6 + 4 = 12	2 + 1 = 3
4.	5 + 1 = 6	2 + 6 = 8	3 + 5 = 8	5 + 4 = 9	2 + 7 = 9	3 + 3 = 6	8 + 2 = 10	3 + 2 = 5

CAN YOU DO THESE PROBLEMS?

1. At Mary's party there were 6 girls and 4 boys. How many children were at the party?

2. Mary's doll had 3 pink dresses and 2 blue dresses. How many dresses had the doll?

3. Mary had 3 cents. Her mother gave her 6 cents more. How many cents had she then?

4. Mary bought a pencil for 2 cents and a balloon for 7 cents. How many cents did she spend?

5. John bought a top for 4 cents and a ball for 5 cents. How many cents did he spend?

6. Mary has 3 cents and John has 7 cents. Can they together buy a kite that costs 10 cents?

7. How many are 6 and 3? How many are 4 and 5? How many are 5 and 5?

8. When you find that 3 and 4 are 7, you are **adding** 3 and 4. 7 is called the **sum.**

$$\begin{array}{r} 4 \\ 3 \\ \hline 7 \end{array}$$

Find the sums:

9.	1 / 5	2 / 2	3 / 7	3 / 1	1 / 1	6 / 3	4 / 4	1 / 8
10.	6 / 1	3 / 6	5 / 5	1 / 6	8 / 2	2 / 5	1 / 3	5 / 4
11.	4 / 2	1 / 2	2 / 8	7 / 1	2 / 4	4 / 6	1 / 9	4 / 3

SOMETHING NEW

A new way to write "2 and 4 are 6" is like this:

$$2 + 4 = 6$$

\+ means **and** or **plus**
= means **are** or **equals**

When you find that $2 + 4 = 6$, you are **adding**. The sign + tells you to add. 6 is the **sum.**

Tell the sums of these numbers:

1. $2+1=?$	**2.** $5+5=?$	**3.** $2+6=?$	**4.** $4+4=?$
$4+5=?$	$4+1=?$	$4+2=?$	$3+1=?$
$3+7=?$	$7+1=?$	$1+6=?$	$2+8=?$
$1+1=?$	$2+5=?$	$5+4=?$	$1+7=?$
5. $1+2=?$	**6.** $4+6=?$	**7.** $3+3=?$	**8.** $5+3=?$
$2+4=?$	$2+7=?$	$6+1=?$	$6+4=?$
$6+3=?$	$1+3=?$	$8+2=?$	$2+3=?$
$2+2=?$	$3+5=?$	$3+4=?$	$7+2=?$

9. How many are 7 apples and 3 apples? How many are 7 and 3?

10. What is the sum of 4 pencils and 3 pencils? What is the sum of 4 and 3? of 6 and 2?

11. If you add 4 and 5, what is their sum?

12. What does $6 + 2$ mean?

13. How many are 3 plus 5? 5 plus 3?

14. Betty buys some candy for 3 cents and a pencil for 4 cents. How much does she pay for both?

WHAT SCORE CAN YOU MAKE?

Play this game. Write the numbers on paper and pin them on the baskets. You have two bean bags. If you throw a bag into a basket, the number on the basket tells how much it counts. If the bag falls on the floor, it counts *zero*. Zero is written like this, 0, and means *not any* or *nothing*.

1. Mary Ann throws one bag into 5 and one into 2. What is her score?

2. Tom throws one bag into 4. As the other bag falls on the floor, it counts 0. How many are $4 + 0$?

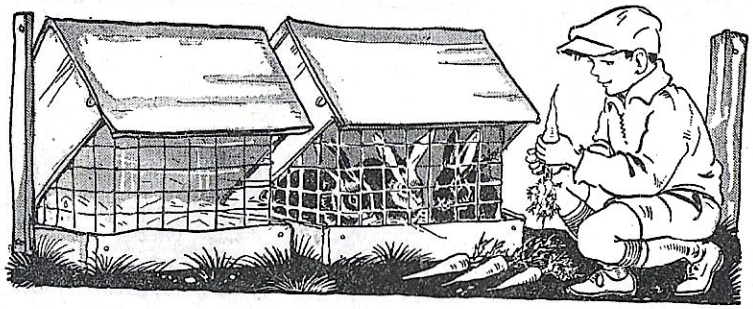
$$\begin{array}{r} 4 \\ 0 \\ \hline 4 \end{array}$$

3. Fred's first bag falls on the floor. His second one also falls on the floor. Fred's score is $0 + 0$. How many is that?

$$\begin{array}{r} 0 \\ 0 \\ \hline 0 \end{array}$$

4. Here are the scores of some of the other boys and girls. Add them quickly:

5	0	7	2	0	0	4	3
0	5	0	5	8	0	5	0
5	5	7	7	8	6	9	3



ADDING ZERO TO A NUMBER

Bobby has 3 rabbits in one rabbit house but he has *no* rabbits in the other house. How many rabbits has he in all? How many are 3 rabbits and *no* rabbits?

A short way to write *no* rabbits is 0 rabbits. 0 means *no;* it also means *not any* or *nothing.*

1. How many are 5 rabbits and no rabbits? How many are 5 and 0? How many are 0 and 5?

2. How many are no rabbits and 6 rabbits? How many are 0 and 6? How many are 6 and 0?

3. If you add 0 to 7, the sum is 7. If you add 0 to 3, what is the sum? If you add 0 to 8, what is the sum?

7	0
0	7
7	7

If you add 0 to any number, the sum is the same as the number itself.

Read each and give the sum:

4.

4	0	1	0	9	0	0	2
0	4	0	1	0	9	0	0
4	4	1	1	9	9	0	2

64 ADDITION FACTS

Here are all the 64 addition facts whose sums are 10 or less. Practice them until you can say all the sums in 2 minutes.

1.

4	8	1	6	1	4	5	0
2	2	1	1	0	0	5	8
6	10	2	7	1	4	10	8

2.

1	0	1	2	7	2	3	0
4	3	8	3	0	7	2	0
5	3	9	5	7	9	5	0

3.

2	9	3	8	1	0	3	6
1	0	5	1	2	4	1	4
3	9	8	9	3	4	4	10

4.

0	5	1	5	7	5	4	3
2	0	6	2	1	1	3	0
2	5	7	7	8	6	7	3

5.

1	8	3	3	0	1	2	0
7	0	3	6	5	5	4	6
8	8	6	9	5	6	6	6

6.

6	2	0	1	0	3	4	3
0	5	1	9	7	7	6	4
6	7	1	10	7	10	10	7

7.

7	2	2	0	5	4	7	6
3	0	6	9	3	5	2	3
10	2	8	9	8	9	9	9

8.

1	9	6	4	2	2	4	5
3	1	2	1	8	2	4	4
4	10	8	5	10	4	8	9

CAN YOU FIND THE MISSING NUMBERS?

1. 4 + * are 9? Can you tell what number is missing where the star is? Ann says that the missing number is 5, because 4 and 5 are 9. Is she right?

$$\frac{4}{*}{}_{9} \qquad \frac{4}{5}{}_{9}$$

2. One of the children is a Blue and the other is a Red. The first child to write all the missing numbers correctly wins a point for his side.

When both children have finished, they erase the answers and another Blue and another Red race to find the missing numbers. The teacher will then write new examples on the board, like those below:

The Reds do these:

1.	3	4	7	5
	4	4	3	0
	7	8	10	5
2.	1	5	7	0
	9	4	1	7
	10	9	8	7

The Blues do these:

1.	3	4	2	9
	6	0	3	1
	9	4	5	10
2.	2	3	5	1
	7	3	2	0
	9	6	7	1

HOW MUCH MORE DO I NEED?

The sign ¢ is often used for *cent* or *cents*. Thus, 5 cents may be written 5¢.

1. Betty has 5¢. How many more cents does she need to buy a doll? 3

2. Frank has 7¢. How many more cents does he need to buy a dog? 3

3. Alice has 3¢. How much more does she need to buy a chair for her doll? 3

Tell what numbers should be put in place of the dots:

4. I have 6¢. I need .3. ¢ more to buy a doll.
5. I have 3¢. I need .7. ¢ more to buy a dog.
6. I have 6¢. I need .1. ¢ more to buy a ball.
7. I have 4¢. I need .1. ¢ more to buy a top.
8. I have 7¢. I need .2. ¢ more to buy a kite.
9. I have 5¢. I need .5. ¢ more to buy a dog.
10. I have 3¢. I need .5. ¢ more to buy a doll.
11. I have 6¢. I need .3. ¢ more to buy a kite.

LEARNING THE LANGUAGE OF SUBTRACTION

1. Tom had 3¢ and he earned 5¢. How much did he have then? How many are 3 and 5?

2. Tom now has 8¢. If he spends 3¢, how many cents has he left? How many are 8 less 3?

3. Ann has 8¢. If she spends 5¢, how many cents has she left? How many are 8 less 5?

4. There are 8 apples on a table. Joe takes 3 of them away. How many apples are left on the table? How many are 3 from 8?

5. If you take 5 pencils from 8 pencils, how many pencils are left? How many are 5 from 8?

6. If you know that *3 and 5 are 8*, you see that *8 less 5 are 3* and that *8 less 3 are 5*. You see also that *3 from 8 are 5* and that *5 from 8 are 3*.

7. How many are 4 and 3? How many are 7 less 3? How many are 7 less 4? How many are 3 from 7? How many are 4 from 7?

8. You usually write "7 less 3 are 4" as shown at the right. You may also write it like this:

$$7 - 3 = 4$$

$$\begin{array}{r} 7 \\ 3 \\ \hline 4 \end{array}$$

The sign − means *take away* or *subtract*. We read it *less*. Thus, "7 − 4 = 3" is read "7 less 4 equals 3."

Read these and tell what each equals:

9.	9 − 1	6 − 2	7 − 5	10 − 7
10.	8 − 7	4 − 4	8 − 4	10 − 5

HOW MANY ARE LEFT?

1. Alice has 6 dolls. She gives 2 dolls to Ann. How many dolls has Alice left?

Alice has 4 dolls left because 2 and 4 are 6.

2. George has 7¢. He spends 3¢ for candy. How many cents has he left?

$$\begin{array}{r} 7 \\ 3 \\ \hline * \end{array} \qquad \begin{array}{r} 7 \\ 3 \\ \hline 4 \end{array}$$

Write 3 under 7. Your teacher will tell you how to think to get the answer.

3. Jack has 7 marbles and loses 2 marbles. How many marbles has he left?

4. Frank had 8 rabbits, but 4 of them ran away. How many rabbits had Frank left?

5. Jane had 9 pennies. She gave 4 of them to her sister. How many pennies had Jane left?

6. Mother had 10 eggs. She used 5 eggs for a cake. How many eggs were left?

7. Billy had 5 little cakes. He ate 1 cake. How many cakes had he left?

8. George and Frank caught 8 fish. Mother cooked 5 fish for lunch. How many fish were left?

NOTE TO TEACHER. In exercises like ex. 2 above, have the pupil think "3 and 4 are 7" if the *additive* method of subtraction is taught, or "3 from 7, 4" if the *take-away* method is used. This also applies to the work on page 12.

HOW MANY ARE LEFT?

1. Betty had 9¢ and spent 5¢ for candy. How many cents had Betty left?

Write 5 under 9. Your teacher will tell you how to think to get the answer.

$$\begin{array}{r} 9 \\ 5 \\ \hline \end{array}$$

2. Bobby had 10¢. He spent 3¢ for candy. How many cents did he have left?

3. Alice bought 6 candy dolls. She gave 4 of them away. How many dolls did she have left?

4. If Dick buys 8 chocolates and eats 8 of them, how many will he have left?

5. If George buys 6 chocolates and doesn't eat any of them, how many chocolates will George have left? How many are 6 less 0?

Subtract these numbers:

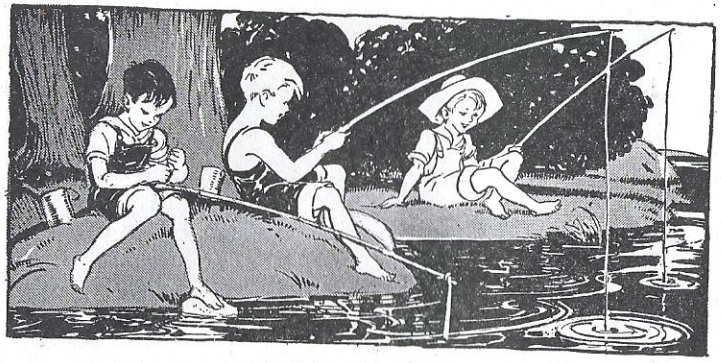
6.

5	6	8	6	9	10	5	4	6
2	3	2	4	1	3	0	4	1

64 SUBTRACTION FACTS

Here are 64 subtraction facts. The top number in each fact is not more than 10. Practice these facts until you can say all the answers in 2 minutes.

1.	6	8	5	7	9	10	8	8
	4	2	1	7	5	4	3	1
	2	6	4	0	4	6	5	7
2.	8	10	7	6	7	4	7	2
	0	2	5	6	1	2	4	0
	8	8	2	0	6	2	3	2
3.	10	7	4	8	9	10	9	6
	3	6	0	7	9	8	1	2
4.	5	8	9	9	4	1	10	5
	3	4	2	0	3	1	1	0
5.	8	9	7	9	4	3	9	5
	6	7	2	4	4	0	6	5
6.	10	6	3	6	2	6	10	4
	7	0	1	1	2	3	5	1
7.	3	9	2	9	0	5	10	6
	2	8	1	3	0	2	6	5
8.	7	1	5	3	8	8	10	7
	3	0	4	3	5	8	9	0



THE BOYS GO FISHING

1. Jack, Tom, and Bob have been fishing. They fished 3 hours in the morning and 2 hours in the afternoon. How many hours did they fish in all?

2. Jack caught 2 large fish and 4 small fish. How many fish in all did Jack catch?

3. Tom caught 2 large fish and 6 small ones. How many fish did Tom catch all together?

4. Bob wanted to catch 10 fish, but he caught only 4 fish. How many more fish would he have to catch to make 10?

5. Jack gave away 3 of the 6 fish he caught. How many fish did he have left?

6. Tom's mother cooked his 2 large fish, and Tom and Mary ate them both for supper. How many large fish did Tom have left?

7. Bob sold one of his fish for 3¢ and another fish for 5¢. How much did he get for them both?

HOW TO ADD SEVERAL NUMBERS

1. Ann had 4 dolls. At Christmas her mother gave her 2 dolls and her aunt gave her 1 doll. How many dolls had she then?

This is the way to find out:

$$\begin{array}{r} 4 \\ 2 \\ 1 \\ \hline 7 \end{array}$$

Start at the bottom and think "1 and 2 are 3." Then think "3 and 4 are 7." You can add these numbers more quickly by saying only "3, 7."

2. George had 6 cents. His father gave him 3 cents and his sister gave him 1 cent. How many cents had he then?

$$\begin{array}{r} 6 \\ 3 \\ 1 \\ \hline \end{array}$$

Make up some stories that use these numbers. Then add the numbers:

3.

1	1	1	4	1	2	3	6
5	2	7	3	6	7	5	1
1	2	2	1	1	1	1	1

4.

1	8	1	5	3	5	4	3
6	0	3	2	3	0	4	1
2	1	3	2	4	5	1	5

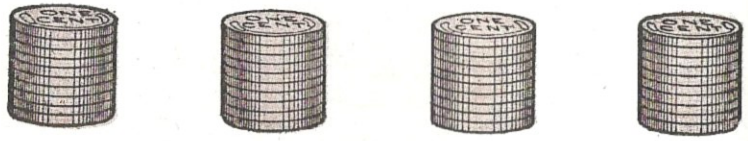
5.

1	1	2	5	3	2	2	9
1	4	5	1	1	0	5	0
8	2	3	4	6	7	1	1

6.

1	2	1	1	6	4	4	6
1	3	3	0	2	3	1	2
0	1	0	1	0	1	2	0
2	4	4	7	2	2	3	1

ADDING TENS



1. Count the pennies in each of the piles above. How many pennies are there in each pile? How many 10's make 40?

2. How many pennies will there be in 5 piles if each pile has 10 pennies? How many will there be in 6 piles? in 7 piles? in 3 piles? in 9 piles?

3. How many 10's make 50? 60? 70? 80? 90?

4. Write forty in figures; also write thirty, fifty, sixty, seventy, eighty, ninety.

5. 10 tens make 100, which we call *one hundred.*

6. Count by 10's to 100.

7. How many are 2 tens and 4 tens? How many are 20 and 40?

$$\begin{array}{r} 40 \\ 20 \\ \hline 60 \end{array}$$

8. *Add these:*

10	20	40	60	10	50	60	70
30	30	40	20	40	30	40	10

9. Betty spent 40¢ for a doll and 30¢ for a book. How much did she spend in all?

10. Frank paid 10¢ for paper and 50¢ for a set of paints. How much did he spend in all?

LEARNING WHAT NUMBERS MEAN

11 means 10 + 1. 12 means 10 + 2. 13 means 10 + 3.

1. What does 14 mean? 15? 16? 18? 19? How many are 10 + 7? 10 + 8? 10 + 9?

2. 21 means 20 + 1. There are 21 coins in the picture. What does 22 mean? 23? 28? 29?

3. 31 means 30 + 1. Tell the meaning of 41; of 42; of 53; of 76.

4. Count to 100. Begin with 31 and count to 60.

5. What number comes next after 45? after 63?

6. What numbers come between 33 and 36? between 49 and 53?

7. Write the numbers up to 50 on cards. Pick out any 10 of these cards and put them on your desk all mixed up, like this:

17 5 11 15 9 2 28 16 25 7

Now put these cards in their right order, like this:

2 5 7 9 11 15 16 17 25 28

Then tell what numbers are missing between each two cards. Thus, 3 and 4 come between 2 and 5.

UNITED STATES MONEY

The coins most often used by us are the *cent*, the *nickel*, the *dime*, the *quarter*, the *half dollar*, and the *dollar*. Sometimes a dollar bill is used in place of a silver dollar. Your teacher will show you some coins and you should learn to know them.

The sign \$ means *dollar* or *dollars*. Thus, 2 dollars is written \$2.

Remember these:

5 cents = 1 nickel	25 cents = 1 quarter
10 cents = 1 dime	50 cents = 1 half dollar
100 cents = 1 dollar	10 dimes = 1 dollar

Exercises

1. Write 3 dollars using the sign \$. Also write 4 dollars; 10 dollars; 1 dollar; 7 dollars.

2. Mary's aunt gave her a dollar bill for her birthday. How many cents make a dollar?

3. Every week Frank's father gives him a nickel and a dime to spend. Frank says that this makes 15¢. Is Frank right?

4. Betty earned a dime yesterday for running errands and Alice earned a nickel. How much more did Betty earn than Alice?

5. How many cents equal 2 dimes and 1 nickel?

COUNTING MONEY

1. Jane has 6 new nickels. Each nickel is the same as 5 cents. Count the nickels by 5's to see how many cents Jane has.

2. Count by 5's to 25. How many nickels make a quarter?

3. Suppose that you have 10 nickels. Count by 5's, and tell how many cents 10 nickels make. How many nickels make a half dollar?

4. 1 dime = 10¢. How many 10's make 100? How many dimes make 100¢? How many dimes make \$1? How many dimes make 50¢?

5. Jack has \$4 and Mary has \$6. How many dollars have both?

Tell what numbers should be put in place of the dots:

6. 2 nickels = . . . cents. 4 dimes = . . . cents.
7. 4 nickels = . . . cents. 7 dimes = . . . cents.
8. 1 nickel and 4 cents equal . . . cents.
9. 1 dime and 6 cents equal . . . cents.
10. 6 dimes and 1 nickel equal . . . cents.
11. 1 half dollar equals . . . dimes.
12. 1 quarter and 2 cents equal . . .¢.
13. 1 quarter and 1 dime equal . . .¢.

AT THE SCHOOL FAIR

1. Ann has 8 popcorn balls to sell at the fair. Tom gives her 3 more popcorn balls to sell. How many popcorn balls must she sell in all? 11

2. Mary has sold 7 dolls and has 5 more dolls to sell. How many dolls will she sell in all? 12

3. Billy is selling balloons. He sells a big balloon for 8¢ and a small one for 5¢. How much will it cost to buy one of each? 13

Here are 18 more addition facts for you to learn. Cover the answers and try to say them quickly:

9 2 11	2 9 11	8 3 11	3 8 11	9 3 12	3 9 12	7 4 11	4 7 11	8 4 12
4 8 12	9 4 13	4 9 13	6 5 11	5 6 11	7 5 12	5 7 12	8 5 13	5 8 13

IF YOU FORGET

1. The addition facts go in pairs like mittens or shoes. $4+9$ and $9+4$ are a **pair** of addition facts. The numbers in the second fact are just like those in the first fact except that they are *turned around* or *reversed*. *Reverse* means to *turn around*. $4+9$ is called the *reverse* of $9+4$. You see that $4+9$ and $9+4$ both have the same sum, 13.

9 4 13	4 9 13

Reverses always have the same sum.

2. To find the reverse of $8+4$, turn the numbers around and you get $4+8$. Both facts have the same sum. If 8 and 4 are 12, then 4 and 8 are 12.

8 4 12	4 8 12

3. What is the reverse of $4+7$? What is the reverse of $5+6$? of $2+9$? of $4+6$? of $5+7$? What is the reverse of $3+8$? of $4+3$?

4. Tom does not know the sum of 3 and 9. So he thinks of its reverse which is 9 and 3. He knows that 9 and 3 are 12. Then he says, "3 and 9 must be 12 because reverses have the same sum."

5. Betty does not know $5+8$. So she thinks of the reverse, $8+5$. She knows that $8+5=13$. Then what does $5+8$ equal?

If you forget any addition fact, think of its reverse and try to give the sum of that.

PROBLEMS AND PRACTICE

1. Mary has 7 pennies in her pocket and 4 pennies in her bank. How many pennies has she in all?

2. Bob is making a toy airplane for his little brother. He has 6 long nails and 5 short nails. How many nails has Bob all together?

3. Alice spent 7 cents for candy and 5 cents for a ball. How much did Alice spend?

4. Billy's mother baked some cookies for him. She baked 9 small cookies and 3 large cookies. How many cookies did she bake for Billy?

5. Ann saw 2 birds on the ground and 9 birds in a tree. How many birds did Ann see?

6. Tom had 8 nickels. His father gave him 4 nickels. How many nickels had Tom then?

Find these sums:

7.

7	5	7	9	4	9	3	8	3
4	6	5	2	8	4	8	5	9

8.

6	5	8	4	5	2	4	9	8
5	8	3	9	7	9	7	3	4

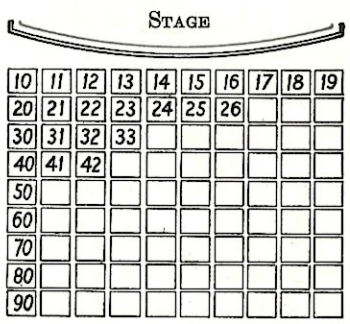
9.

8+5=?	9+3=?	7+5=?	8+3=?
5+6=?	7+4=?	4+8=?	9+2=?
2+9=?	3+8=?	9+4=?	5+8=?
4+7=?	8+4=?	6+5=?	3+9=?

SELLING TICKETS TO THE SCHOOL PLAY

Tom is selling tickets for the school play. The picture shows the numbers on the seats.

1. There are 10 seats in each row. Draw a picture like this and put in all the missing seat numbers.



2. Tom makes tickets for each seat. The first ticket is number 10 and the last one is number 99. He puts the tickets for each row in a pile by itself so that he can find any ticket quickly if he knows its number.

3. In the first pile he puts tickets 10 to 19. What tickets will he put in the second pile? in the fifth?

4. Betty gets ticket 33. In what row is that?

5. Ann wants a seat in the second row. Tom gives her ticket 53. Is that right? What numbers could he give her?

6. Mary has ticket 23 and Alice has ticket 27. Give the numbers of the seats between them. If Mary wants to sit next to Alice, what numbers should Mary ask for?

7. Make 90 tickets. Start with 10 and number them. Put them in piles the way Tom did. Then find these tickets: 15, 28, 82, 93, 45, 27, 61, and 89.

ANN'S BIRTHDAY PARTY

Ann is going to have a birthday party. She is getting ready for it.

1. Ann has asked 5 children to come to her party. She wants to have 11 children. How many more children does she need to ask?

2. If 11 children are coming to the party and 6 of them are boys, how many girls are coming?

3. Ann wants 12 paper caps for the children. She has 9 paper caps now. How many more paper caps does she need to buy?

4. Ann's mother will make 12 small boxes of candy for the children. She made 8 boxes of candy this morning. How many more boxes of candy must she make this afternoon?

5. There are 7 chairs around the table. Ann wants 12 chairs in all for the children and herself. How many more chairs must Ann put at the table?

What numbers should be put in place of the stars?

6.

4	5	2	4	9	5	8	5	7
*	*	*	*	*	*	*	*	*
12	11	11	13	12	13	11	12	11

7.

8	4	7	3	8	6	9	9	3
*	*	*	*	*	*	*	*	*
13	11	12	11	12	11	13	11	12

HOW ADDITION HELPS SUBTRACTION

1. Count the oranges on the plate. Count the oranges on the table. How many are 6 oranges and 5 oranges? If mother gives 5 oranges to Alice, how many oranges will there be left? How many are 11 less 5? How many are 5 from 11?

2. How many are 11 oranges less 6 oranges? How many are 11 less 6? How many are 6 from 11?

3. If you know that 6 and 5 are 11, you see that it helps you to remember that 5 from 11 are 6 and that 6 from 11 are 5.

4. How many are 9 from 11? If you think "9 and how many are 11?", you find that 9 and 2 are 11. This helps you to see that 9 from 11 must be 2.

5. How many are 4 from 12? First think "4 and what are 12?" Then how many are 4 from 12?

6. How many are 8 from 13? Think "8 and what are 13?" Then how many are 8 from 13?

SOME NEW SUBTRACTION FACTS

Here are 18 new subtraction facts. Cover the answers with a sheet of paper and try to say them:

11	11	12	12	13	13	11	11	12
3	8	9	3	4	9	2	9	5
8	3	3	9	9	4	9	2	7
12	13	13	12	12	11	11	11	11
7	5	8	4	8	7	4	5	6
5	8	5	8	4	4	7	6	5

1. You know that $7 + 5 = 12$. What subtraction facts does this give you?

2. Make two subtraction facts from $9 + 4 = 13$.

3. How many are $12 - 8$? Think "8 and what are 12?" Then $12 - 8$ equals what?

4. What addition fact helps you to find the answer to $11 - 3$? to $11 - 7$? to $12 - 9$?

Subtract these as quickly as you can:

5.	11	11	12	13	12	11	13	11	11
	3	2	9	4	8	9	9	7	6
6.	13	12	11	12	13	12	11	11	12
	8	5	5	7	5	3	8	4	4
7.	11	13	12	11	12	13	11	12	11
	6	9	3	8	5	8	2	8	7

TRY TO DO ALL THESE PROBLEMS

1. Billy can stay 11 weeks on his grandfather's farm. He has been there 6 weeks. How many more weeks can he stay on the farm?

2. There were 13 books on the shelf. Alice put 9 of them on the teacher's desk. How many books were left on the shelf?

3. Joe's mother bought 12 cookies. She gave the boys 4 cookies. How many cookies were left?

4. Jim had 11 cents in his pocket, but now he has only 7 cents. He has lost the rest. How many cents has he lost?

5. Peggy wants to buy a toy that costs 13 cents. She has only 4 cents. How many more cents does Peggy need to get?

6. It is 11 miles from Jack's house to the lake. Jack rode 9 miles with his father and walked the rest of the way. How far did Jack walk?

7. In a game there were 12 children and 5 of them were boys. How many girls were there?

8. Uncle Tom had 13 apples. He gave 8 apples to Betty and left the rest on the table. How many apples were left on the table?

9. Mary's mother had 12 eggs. She used 3 eggs in a cake. How many eggs did she have left?

10. Jane had 11 candies. She gave 3 candies to Alice. How many candies did Jane have left?

DO YOU ADD OR SUBTRACT?

1. Dick spent 7¢ for marbles and 5¢ for a bus ride. How much did he spend in all?

2. Billy wants to buy a pencil that costs 10¢. He has saved 7¢. How much more does he need?

3. George had 13 nuts in his pocket. He gave 9 nuts to the squirrels in the park. How many nuts did George have left?

4. Jane bought a box of crackers for 7¢ and a pear for 4¢. How much did both cost?

5. Bob said that he had 13¢ when he went to the picnic. He had 4¢ when he came home. How many cents did he spend?

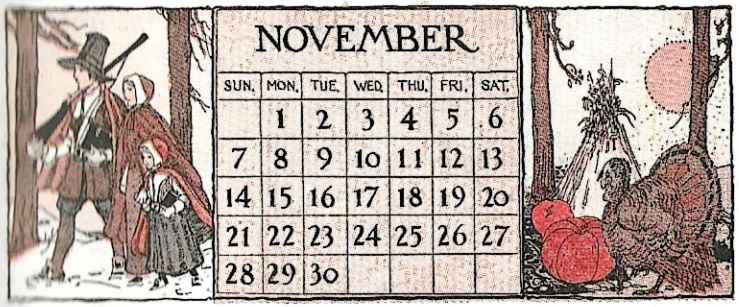
Add these numbers:

6.	8	5	9	4	5	2	7	8	4
	4	6	3	7	5	9	5	3	6
7.	5	9	6	0	3	5	5	3	4
	8	4	5	7	6	7	4	9	3

Subtract these numbers:

8.	11	12	11	13	12	11	10	9	8
	7	5	9	5	8	3	7	6	4
9.	13	12	10	11	13	12	11	8	5
	8	3	6	2	4	7	4	0	5

LEARNING TO USE THE CALENDAR



1. This is a calendar for November. Read all the numbers on it.

2. Read the days in November like this: November first, November second, November third.

3. When does Thanksgiving Day come?

4. Point to all the school days on the calendar for November and count them.

5. Name the months of the year. Name the days of the week.

6. What month is it now? What year is it?

7. What day of the week is this? what date?

8. What is the date of Christmas Day? of New Year's Day? of Washington's Birthday?

9. Write the date of your birthday on the board.

10. Make a calendar for this month like the one at the top of this page.

NOTE TO TEACHER. The year should be read in the usual way. Thus, 1937 is read "nineteen thirty-seven."

SOME MORE ADDITION FACTS

Here are 18 more addition facts. Cover the answers with a sheet of paper and try to say them:

9	5	6	7	6	8	6	9	6
5	9	6	6	7	6	8	6	9
14	14	12	13	13	14	14	15	15

7	8	7	9	7	9	8	8	9
7	7	8	7	9	8	9	8	9
14	15	15	16	16	17	17	16	18

1. Study the 18 addition facts given above and tell which pairs of facts are *reverses*.

2. What is the reverse of 8 and 6? of 6 and 9? of 9 and 7? Do reverses have the same sum?

3. If you have 9¢ and your father gives you 5¢, how much will you have then? How many are 9¢ and 5¢? How many are 9 and 5? 5 and 9?

4. How many are $8 + 9$? $9 + 8$?

5. Tom sold 9 papers yesterday and 9 more to-day. How many papers did he sell all together? How many are 9 and 9?

6. A red pencil costs 8¢. A blue pencil costs 7¢. If Ann buys one of each, how much will they both cost? How many are 8 and 7?

7. Bob bought 7 stamps from Mary and 6 stamps from Jack. How many stamps in all did Bob buy?

HELPING YOU TO REMEMBER

1. What is the sum of 6 and 9? What is the reverse of 6 and 9 and what is its sum?

Reverses always have the same sum.

2. Ann doesn't remember the sum of 7 and 8 so she thinks of its *reverse* which is 8 and 7. She knows that $8 + 7 = 15$. Then what does $7 + 8$ equal?

3. What is the reverse of $7 + 7$? Mary says that $7 + 7$ doesn't have a reverse because when you turn the numbers around, you get $7 + 7$ again. Do you think Mary is right?

4. Does $8 + 8$ have a reverse? If so, give it.

5. Does $8 + 9$ have a reverse? Tell why.

Give the sums as quickly as you can:

6.	9	7	8	7	8	9	8	6	7
	5	7	9	8	6	7	8	9	6
7.	6	9	6	5	8	9	6	7	9
	8	9	7	9	7	6	6	9	8
8.	7	6	9	6	9	6	5	7	8
	8	6	7	8	9	7	9	7	6
9.	8	7	9	9	8	9	7	8	6
	9	6	8	5	7	6	9	8	9

If you forget any addition fact, think of its reverse and try to give the sum of that.

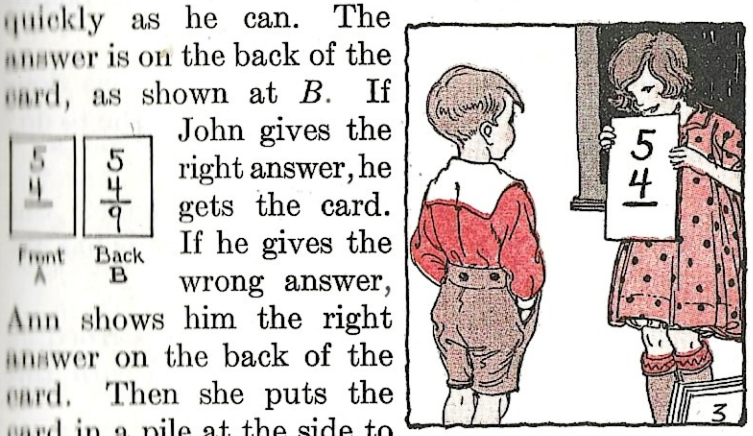
THE 100 ADDITION FACTS

Practice the addition facts below until you can say all these sums in 3 minutes.

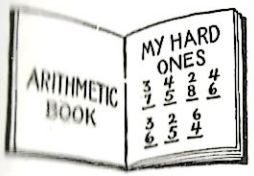
1.	3 6	1 5	4 7	1 1	6 1	0 7	1 2	6 6	2 2	1 0
2.	3 9	7 4	5 3	8 6	5 0	5 9	3 4	6 3	2 6	0 3
3.	7 9	9 4	3 2	4 4	0 8	1 7	5 6	4 0	7 2	6 8
4.	3 1	4 5	8 2	2 0	0 9	4 1	7 5	6 4	1 3	9 1
5.	6 7	3 0	5 4	4 8	4 6	2 4	4 9	5 1	1 8	0 6
6.	5 7	7 7	0 2	3 3	6 5	2 8	5 5	9 0	5 8	4 2
7.	2 1	7 8	2 3	0 1	8 3	6 9	1 4	7 0	9 3	3 8
8.	6 2	9 2	8 8	7 6	6 0	3 5	9 6	2 7	8 0	8 1
9.	8 5	5 2	9 8	7 1	1 9	0 0	2 9	7 3	9 5	8 4
10.	9 9	4 3	3 7	0 4	9 7	8 7	1 6	2 5	8 9	0 5

HOW JOHN LEARNS TO ADD WELL

Ann is testing John to see how well he can add. She shows him a card like *A* and he tells the sum as quickly as he can. The answer is on the back of the card, as shown at *B*. If John gives the right answer, he gets the card. If he gives the wrong answer, Ann shows him the right answer on the back of the card. Then she puts the card in a pile at the side to show that John did not know it. When they have finished, John counts the cards he got right. He writes the facts he did not know in his arithmetic notebook and studies them. Ann will test him to-morrow on these hard ones.



Front A Back B



Make a set of 100 cards like those above. Put one of the facts on page 32 on each card. Then ask some child to test you. If there are any facts you do not know, copy them in your notebook and study them.

NOTE TO TEACHER. The flash cards, to be made by the pupils, should be about 3 inches long and 2 inches wide.

FINDING HOW MANY MORE

1. Jack needs 16 boards to build a rabbit house. He has 9 boards now. How many more boards must he get? 9 and how many make 16?

2. Mary had 15 examples to do. She has done 8 of them. How many more examples has she to do? 8 and how many make 15?

3. Betty has 17 Christmas cards to make. She has made 8 of them. How many more cards has she to make? 8 and how many make 17?

4. John wants to earn 15¢ to-day. He earned 9¢ this morning. How much more must he earn this afternoon? 9 and how many make 15?

5. How much must you add to 7 to make 13?

6. Peggy has promised to sell 12 tickets for the school play. She has sold 6 tickets. How many more must she sell? 6 and how many are 12?

What numbers should be put in place of the stars?

7.	9	7	6	9	8	9	7	9	7
	*	*	*	*	*	*	*	*	*
	15	13	14	16	17	14	14	18	15
8.	7	9	6	8	8	6	8	5	6
	*	*	*	*	*	*	*	*	*
	16	17	12	15	16	15	14	14	13

HOW ADDITION HELPS SUBTRACTION

1. How many are 9 and 9? How many are 18 less 9? How many are 9 from 18?

2. How many are 7 and 7? How many are 14 less 7? How many are 7 from 14?

3. How many are 8 + 8? How many are 8 from 16? How many are 16 − 8?

4. Joe needs 15¢. He has 7¢ now. How many more cents must he earn? 7 and what are 15?

5. If you have 15 marbles and lose 7 of them, how many will you have left? How many are 7 from 15? How many are 8 from 15?

6. If you know that 6 + 7 = 13, what does 13 − 7 equal? How many are 7 from 13? What does 13 − 6 equal? How many are 6 from 13?

7. Mary is trying to find how many are 6 from 14. She thinks "6 and 8 are 14, so 6 from 14 must be 8." Is Mary right?

8. How many are 9 from 17? Think "9 and what make 17?" Then how many are 9 from 17?

9. How many are 16 less 7? First think "7 and what make 16?" Then how many are 16 less 7?

10. Tom remembered that 8 from 14 are 6. Then the teacher asked him, "How many are 8 from 15?" Tom said, "8 from 14 are 6, so 8 from 15 must be 7 because 15 is 1 larger than 14." Was Tom right?

18 MORE SUBTRACTION FACTS

Here are 18 more subtraction facts. Cover the answers with a sheet of paper and try to say them:

13 − 6 = 7	13 − 7 = 6	16 − 9 = 7	16 − 7 = 9	14 − 5 = 9	14 − 9 = 5	15 − 6 = 9	15 − 9 = 6	12 − 6 = 6
14 − 6 = 8	14 − 8 = 6	17 − 8 = 9	17 − 9 = 8	16 − 8 = 8	15 − 7 = 8	15 − 8 = 7	18 − 9 = 9	14 − 7 = 7

1. Ann has 14¢. She buys an orange for 5¢. How many cents has she left?

2. This morning there were 12 apples on the table. There are only 6 apples there now. The children ate the rest. How many apples did they eat?

3. Frank had 17 little chicks. He sold 8 of them to Tom. How many chicks did Frank have left?

Subtract these as quickly as you can:

4.	18 − 9 =	13 − 7 =	16 − 9 =	15 − 7 =	14 − 9 =	17 − 8 =	14 − 7 =	15 − 9 =	14 − 6 =
5.	16 − 8 =	15 − 8 =	17 − 9 =	14 − 8 =	15 − 6 =	12 − 6 =	14 − 5 =	16 − 7 =	13 − 6 =
6.	14 − 9 =	16 − 7 =	17 − 8 =	18 − 9 =	13 − 6 =	15 − 7 =	16 − 8 =	14 − 6 =	15 − 9 =

AN ADDITION GAME

This class is divided into two teams. The Stars are in rows 1, 3, and 5. The Giants are in rows 2, 4, and 6. The teacher shows the flash card $\boxed{\frac{9}{5}}$. All the pupils silently write the sum. Then the teacher shows another flash card and the pupils write its sum. After the teacher shows ten cards, she reads the correct answers and the children mark each other's papers as quickly as they can.

The pupils who have all the sums correct should stand. If 5 Stars stand, then 5 is the score for that team. If 7 Giants stand, then 7 is the score for the Giants and they win the first test.

The teacher will then show ten more flash cards. After five tests, the team that has won the greater number of times wins the game.

A SUBTRACTION RACE

The pupils are seated at their desks with the same number of players in each row. The teacher has a pile of cards like the one at the right. Each card has four subtraction examples on it. On the front desk of each row the teacher places, face down, as many cards as there are players in the row.

17	14	13	16
9	5	8	7

When the teacher says "Start," the pupil in the front seat of each row picks up the top card, runs to the board, and writes his examples with their answers on the board. Then he runs back to his seat and puts the other cards on the desk behind him.

Then the second player in the row takes the top card on his desk. He runs to the board with it and puts his examples and their answers on the board.

The game goes on until all the players have put their examples on the board.

If a player makes a mistake, the next one in his row corrects it when his turn comes. The row that finishes first, with all its examples right, wins.

These examples are often missed. Try them.

1.	15	14	17	16	13	12	18	13
	8	9	8	7	6	5	9	9
2.	13	12	15	14	16	17	14	11
	4	3	6	6	9	9	5	2

THE 100 SUBTRACTION FACTS

Practice the subtraction facts below until you can say all the answers in 3 minutes.

1.	6	11	9	6	8	9	16	7	13	8
	3	2	4	0	3	6	7	3	4	1
2.	2	10	15	3	5	12	9	14	2	9
	2	9	6	0	1	6	5	8	1	8
3.	5	9	11	10	6	8	4	7	12	4
	4	0	3	4	1	5	3	5	5	4
4.	1	11	8	3	9	2	15	7	4	14
	0	4	8	1	7	0	7	4	2	9
5.	6	12	10	7	11	5	9	16	8	17
	5	3	6	0	7	3	1	9	7	8
6.	8	6	4	13	10	14	4	10	3	11
	4	2	0	5	8	5	1	5	2	5
7.	5	9	12	10	5	13	6	14	3	14
	0	9	7	7	5	9	4	7	3	6
8.	5	7	0	8	7	11	12	7	6	12
	2	2	0	2	7	8	4	1	6	8
9.	11	13	1	9	10	10	15	8	17	8
	9	6	1	3	2	1	8	6	9	0
10.	7	13	10	9	11	12	15	13	16	18
	6	7	3	2	6	9	9	8	8	9

COUNTING PENNIES

Tom sells newspapers. He sells each paper for 2 cents. Every night he counts the money he gets for the papers. When he counts the pennies, he puts 10 pennies in each pile. Look at the picture and tell how many pennies he got to-day for his papers. How many papers did he sell to-day?

CHAPTER II

ADDITION

NUMBERS TO 1000

1. The number 6 means 6 *ones* or 6 *units*. How many units are there in 7? in 10? How many units make 1 ten?

2. The number 30 means 3 tens. How many tens are there in 20? in 50? in 100?

3 tens = 30

3. 200 means 2 hundred. 600 means 6 hundred. What does 400 mean? 500? 700? 800?

4. We write 10 hundreds thus: 1000. We read 1000 *one thousand*. What does 2000 mean?

5. Remember these:

10 units = 1 ten, or 10
10 tens = 1 hundred, or 100
10 hundreds = 1 thousand, or 1000

6. The number 435 means 4 hundreds, 3 tens, and 5 units. We read it *four hundred thirty-five*.

7. The number 608 means 6 hundreds, no tens, and 8 units. We read it *six hundred eight*.

Remember that *zero* means *not any* or *nothing*.

USING HUNDREDS

1. Alice lives at 724 Baker Street. Say *seven hundred twenty-four* (not *seven hundred and twenty-four*).

2. There are 540 children in our school and 601 children in the Park School. 540 is read *five hundred forty*. 601 is read *six hundred one*.

3. *Read the following:*

Betty lives at 680 Hill Street.
There are 115 pages in Frank's new book.
Mary's class is in Room 109.

4. *Read these numbers:*

296	789	556	938	851	217
483	875	439	127	648	368

5. *Write these numbers in figures:*

Eight hundred five — Five hundred six
Nine hundred sixty-five — Nine hundred eighteen
Four hundred twenty-nine — Two hundred thirty-six

6. Mary's brother was born in 1921. The year 1921 could be read *one thousand nine hundred twenty-one* or *nineteen hundred twenty-one*. It is shorter to read it *nineteen twenty-one*. Give three ways of reading each of these years: 1937, 1492, 1877.

7. Read: Frank was born in the year 1928.

DOLLARS AND CENTS

When we write dollars and cents, we write the sign \$ before the dollars and separate the dollars from the cents by a period. This period is called a **decimal point.**

3 dollars and 25 cents is written \$3.25.
2 dollars and 8 cents is written \$2.08.
5 dollars and no cents is written \$5.00 or \$5.
We have learned that 86 cents is written 86¢. It is also written \$0.86 or \$.86.
5 cents is written 5¢ or \$0.05 or \$.05.

Exercises

1. Frank saw these prices in a toy shop. Read each of them:

Doll, \$.59	Coaster, \$3.00	Bank, \$1.35
Baseball, \$.65	Airplane, \$3.75	Train, \$3.05
Teddy bear, \$.75	Auto, \$10.50	Skates, \$4.95

2. Read these: \$0.07; 85¢; \$.01; \$0.76.

3. Write 12 cents in three different ways. Write 6 cents in three different ways.

4. Use the sign \$ and the decimal point to write these:

4 dollars and sixty-five cents
3 dollars and twelve cents
1 dollar and thirty-one cents
7 dollars and no cents

5. Give two other ways of writing \$0.07.

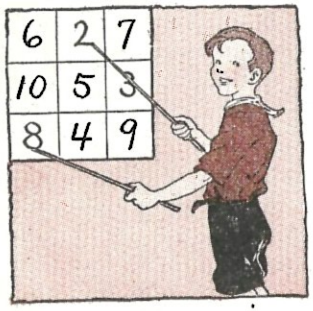
HOW WELL CAN YOU ADD?

1. Take the test on the 100 addition facts that are given on page 32.

2. If you have trouble with the addition test on page 32, have one of your friends test you with the addition cards that you were told to make on page 33. Write all the addition facts that you miss in a notebook and study them.

NOTE TO TEACHER. The test on page 32 may also be given as a written test, as follows: The pupil places the edge of a sheet of paper under row 1, writing the answers along the edge of the paper. When row 1 is finished, the answers should be folded under, row 2 being worked along the folded edge, and so on. It will save time to fold the paper in advance, each fold being about 1 inch wide.

AN ADDITION GAME



Tom is the leader. He points to 8 and 2 and asks Fred their sum. Fred says "10." Then Tom points to two other numbers. If Fred gives the wrong sum, Tom corrects him and Fred takes his seat. If Tom does not see Fred's mistake, Tom must take his seat, too, and the pupil who first sees the mistake can be the leader. Play this game.

Always point to both numbers at the same time.

ADDING TWO-FIGURE NUMBERS

Jane was saving money. She had 45¢ in her bank and put in 23¢ more. How much money had she then in her bank?

To find out, you must add 45¢ and 23¢.

Write 23 under 45 and draw a line.
Add 3 and 5, saying, "3, 8." Write 8 under 3.
Add 2 and 4, saying, "2, 6." Write 6 under 2.
The sum is 68. You see that Jane then had 68¢.

$$\begin{array}{r} 45 \\ 23 \\ \hline 68 \end{array}$$

Exercises in Adding

1. Jane spent 25¢ for a doll and 22¢ for a teddy bear. How much did she spend for both?

2. At the picnic there were 21 girls and 18 boys. How many children were there all together?

Add these:

3.	73	48	32	13	61	41	57
	16	51	47	85	13	47	12
4.	83	43	12	45	14	60	14
	15	12	26	54	24	39	83
5.	60	63	17	40	20	22	50
	27	16	61	29	60	53	42
6.	12	55	37	23	51	61	11
	47	30	12	64	21	15	70

ADDING TWO-FIGURE NUMBERS

There were 63 boys and 54 girls at the school picnic last Saturday. How many children in all were at the picnic?

You add 63 and 54 as shown here. How many children were there in all?

$$\begin{array}{r} 63 \\ 54 \\ \hline 117 \end{array}$$

Exercises in Adding

Add these numbers:

1.	27 90	24 84	50 73	34 83	92 96	61 85	76 90
2.	91 12	92 67	72 50	21 94	95 91	91 83	63 72
3.	55 70	47 81	94 54	23 86	83 94	86 72	90 71
4.	44 61	73 83	72 95	70 72	62 94	30 85	75 62
5.	10 98	51 97	34 92	42 76	81 68	62 53	75 43
6.	98 31	64 65	56 61	81 51	41 96	92 21	33 71

PROBLEMS AND PRACTICE

1. Ann saved 42¢ last month and 35¢ this month. How many cents did she save in the two months?

2. Bob had 33 marbles. Yesterday he bought 24 marbles. How many marbles has Bob in all?

3. In our school there are 82 girls and 74 boys. How many children are there in the school?

4. Jack sells papers after school and Saturdays. Last week he sold 85 papers and this week he sold 81 papers. How many papers in all did he sell in the two weeks?

5. Mary made 24 white paper flowers and 24 blue paper flowers. How many flowers did she make?

Add these numbers:

6.	27 71	56 82	91 42	243 702	655 324	323 624	867 12
7.	81 17	97 70	35 23	374 424	405 272	321 664	845 33
8.	71 74	72 53	53 14	135 851	101 587	250 648	614 63
9.	73 83	42 15	61 78	761 108	420 503	634 312	516 31
10.	43 35	82 85	40 90	262 536	421 571	793 105	743 40

AT THE DOLLS' STORE

1. Ann is shopping for her dolls. The dolls need new shoes. A pair of shoes for the large doll will cost 27¢. Shoes for the small doll will cost 22¢. How much will shoes for both dolls cost?

2. The large doll's name is Mary. Ann paid 35¢ for Mary's dress and 13¢ for her cap. How much did Ann pay for both?

3. The small doll is called Peggy. Ann paid 9¢ for Peggy's cap. Mary's cap cost 13¢. How much more did Mary's cap cost than Peggy's?

4. Ann now has only 15¢. If she buys Peggy a pair of white stockings for 9¢, how many cents will Ann have left?

5. Mary would like a blue dress that costs 56¢ and Peggy would like a pink dress that costs 42¢. Both dresses would cost how much?

ADDING BY ENDINGS

In Chapter I you learned the 100 addition facts in which you added one figure to one figure. Now you must begin to learn how to add a number of two figures to one figure, like 12 and 4.

Study these sums. Then cover the answers with a card and see if you can remember them:

2	12	5	15	4	14	7	17
4	4	2	2	3	3	3	3
6	16	7	17	7	17	10	20

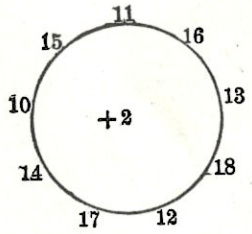
Oral Exercises

Add these as quickly as you can. Give only the sums:

1.	4	14	3	13	2	12	8	18
	2	2	3	3	5	5	2	2
2.	13	12	14	11	11	13	12	14
	5	6	5	6	2	4	7	1
3.	16	15	13	11	16	11	14	18
	2	3	7	5	3	8	6	1
4.	15	12	19	17	11	15	17	11
	5	8	1	1	9	4	2	4
5.	11	13	14	16	13	12	11	12
	7	6	4	4	2	2	3	3

MARY PLAYS AN ADDITION GAME

As Mary wants to be able to add well, she plays this addition game.



1. She draws this circle on the board. Then she points to each number on the circle and adds the 2 in the middle to it.

2. After Mary has gone all around the ring, she erases the number 18. She also erases the 2 in the middle and puts 3 in place of it. Then she goes around the circle again, adding 3 to each number.

3. Mary next erases 17 and puts 4 in the middle. This time she adds 4 to every number on the ring.

Mary goes on playing the game in this way:

4. She erases 16, puts 5 in the middle, and adds.
5. She erases 15, puts 6 in the middle, and adds.
6. She erases 14, puts 7 in the middle, and adds.
7. She erases 13, puts 8 in the middle, and adds.
8. She erases 12, puts 9 in the middle, and adds.
9. She erases 11, puts 10 in the middle, and adds.

The game is now over, because there are no more numbers on the ring to erase. Mary tries to play the whole game without making a mistake.

You can play this game at home or at school. It will help you to add quickly and correctly.

ADDING COLUMNS

If you have learned well the work on page 49, you are now ready to add any column of numbers whose sum is not more than 20.

When you add, begin at the bottom and add up. Thus, in adding the column below, say, "7, 11, 17."

To be sure that 17 is the right sum, *check* the work by adding the numbers again, but this time begin at the top and add down, saying, "6, 10, 17." If you get the same sum both times, call the answer right.

6
4
7
17

Practice in Adding

Add these numbers and check your work:

1.	3	5	4	2	3	3	4	4	2
	8	9	9	9	8	9	7	8	9
	4	2	4	3	5	6	6	3	7
2.	5	3	8	4	7	3	6	6	7
	7	9	0	9	7	9	8	7	8
	6	5	6	2	4	4	4	5	0
3.	6	4	9	0	5	5	9	3	8
	8	9	7	9	8	6	0	7	9
	3	6	4	8	4	8	9	8	2
4.	0	4	4	0	3	3	5	4	7
	5	0	2	6	2	0	4	7	0
	4	7	0	5	6	7	0	0	7
	3	5	8	4	0	4	6	3	4

PLAYING HOPSCOTCH

Each player hops three times. The score of each player is found by adding the numbers of the three places into which he hops.

1. Billy hops into 7, 8, and 3. As he hops, he adds, saying, "7 and 8 are 15, 15 and 3 are 18." Billy's score is 18.

2. Betty hops into 5, 7, and 4. She adds by saying only "5, 12, 16." This is a much quicker way of adding than Billy's way.

3. Fred hops into 5, 3, and 8 and adds as Betty does. What does he say? What is his score?

4. Here are the scores of some children who played Hopscotch. Which child won?

Tom	*Joe*	*Bob*	*Ann*	*Mary*	*Dick*	*Alice*	*Jane*
2	8	3	4	2	5	8	2
7	7	5	2	7	7	7	5
5	2	4	7	3	5	5	8

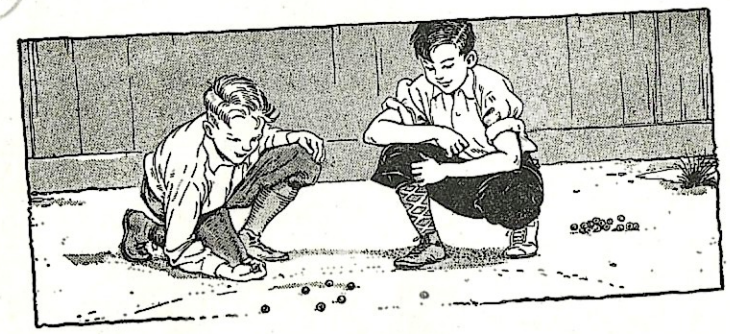
5. Play Hopscotch in your room. Add the way Betty does. The pupil with the highest score wins.

6. Change the 7 in the middle to 6 and play again.

ADDING COLUMNS

Add these numbers and check your work:

1.	8	9	8	7	5	6	8	7
	1	3	0	6	2	4	1	2
	4	3	7	7	8	8	5	9
2.	6	2	6	3	2	5	8	4
	5	9	4	9	8	2	9	3
	8	8	5	7	8	3	2	8
3.	5	6	6	1	2	9	3	9
	4	0	3	9	7	0	3	0
	1	7	3	8	4	1	5	7
4.	6	6	3	5	0	2	5	1
	8	9	6	1	8	9	6	3
	3	1	5	6	9	3	6	9
5.	4	5	1	3	0	2	6	3
	7	4	7	9	8	5	7	9
	9	7	6	5	4	6	5	4
6.	9	9	2	1	1	8	7	6
	1	7	5	8	4	5	4	5
	1	4	8	8	9	2	3	1
7.	5	2	2	9	4	6	9	6
	3	8	9	7	3	7	3	8
	5	7	4	1	6	2	7	3



TWO-COLUMN ADDITION

1. Bob had 32 marbles. He bought 12 marbles and Uncle Joe gave him 15 marbles. How many marbles did Bob have then?

You must add 32, 12, and 15 to find the answer.

Write the numbers as shown at the right and add upwards like this:

First add 5, 2, and 2 and write 9 under 5. Then add 1, 1, and 3 and write 5 under 1. The sum is 59.

Bob had 59 marbles in all.

32
12
15
59

Add these numbers and check your work:

2.	41	36	75	42	23	64	40
	45	20	32	71	14	21	37
	12	43	32	25	40	73	51
3.	84	21	20	41	53	52	23
	10	56	35	32	60	12	80
	62	32	21	13	10	11	14

GETTING READY TO ADD LONGER COLUMNS

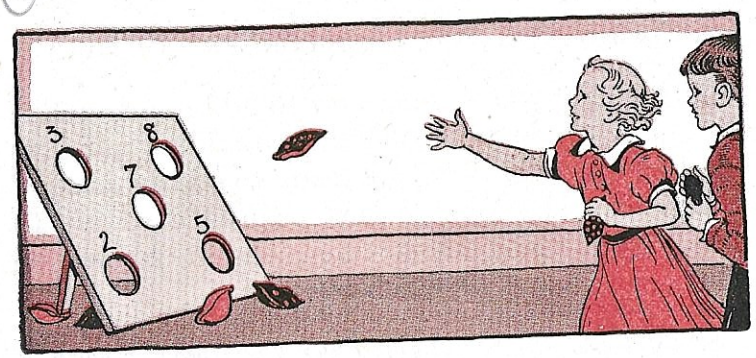
On page 49 you learned how to add numbers like 13 and 4. Now you will practice adding numbers like 18 and 3 in order to get ready to add columns of figures like those on the next page. In adding 18 and 3, try to think 21 at once. The work given on this page is called **adding by endings.**

Study these sums. Then cover the answers with a card and try to give the sums correctly:

1.	5	15	25	35		9	19	29	39
	5	5	5	5		2	2	2	2
	10	20	30	40		11	21	31	41
2.	8	18	28	38		8	18	28	38
	2	2	2	2		3	3	3	3
	10	20	30	40		11	21	31	41

Say these sums as quickly as you can:

3.	9	19	29	39		9	19	39	29
	1	1	1	1		3	3	3	3
4.	8	18	28	38		7	17	37	27
	4	4	4	4		3	3	3	3
5.	9	19	39	29		9	29	19	39
	5	5	5	5		4	4	4	4
6.	10	30	20	40		6	26	16	36
	3	3	3	3		4	4	4	4



FINDING YOUR SCORE IN A GAME

Betty has 4 bean bags. She throws one into the hole marked 3; the second goes into hole 8, the third into 7, and the fourth into 2. Betty finds her score by writing the numbers as shown here. Then she adds up, thinking, "2, 9, 17, 20." She checks her answer by adding down, thinking, "3, 11, 18, 20." Betty's score is 20 because the sum is 20 each time.

3
8
7
2
20

Other children throw the bean bags into holes having these numbers. Find their scores.

1.	5	4	3	3	4	5	4	4
	8	8	7	9	7	8	7	9
	2	6	8	5	8	7	4	6
	5	4	3	4	4	5	5	5
2.	9	4	2	3	3	2	2	3
	2	2	8	3	9	9	6	6
	6	6	4	4	3	4	9	5
	2	5	5	5	3	3	5	4

HARDER WORK IN ADDING BY ENDINGS

1. If you had 18¢ and earned 7¢ more, how many cents would you have then? How many are 18 and 7?

18
7
25

2. If you had 28¢ and earned 7¢ more, how many cents would you have then? How many are 28 and 7? How many are 38 and 7?

3. You can learn a much shorter way to get such sums by studying the following:

Since 8 + 7 = 15, these sums all end in 5.

8	18	28	38	48
7	7	7	7	7
15	25	35	45	55

The left-hand figure of each sum is 1 more than the figure above it, because 7 + 8 are more than 10.

4. How many are 25 and 9? Find the sum the short way.

Think: "The sum ends in 4 because 5 + 9 = 14. The left-hand figure of the sum is 1 more than 2, which is 3. 34 is the sum."

25
9
34

Say these sums as quickly as you can:

5.	8	18	28	38	7	17	37	27
	6	6	6	6	7	7	7	7

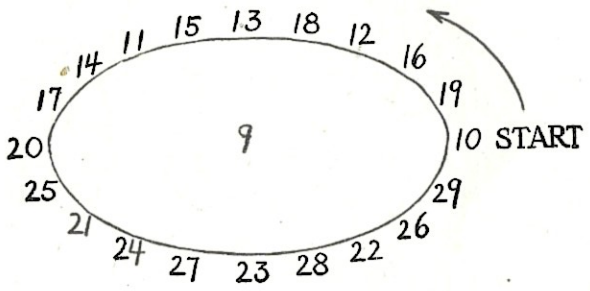
PRACTICE IN ADDING BY ENDINGS

Practice adding these numbers until you can say all the sums in 3 minutes:

Give only the answer. Thus, for 11 and 9 say only "20." You will need to use these new sums when you add long columns like those on page 60.

1.	11 9	21 9	17 4	27 4	12 8	22 8	16 5	26 5
2.	16 8	26 8	19 3	29 3	17 7	27 7	15 9	25 9
3.	13 7	23 7	16 7	26 7	19 9	29 9	14 6	24 6
4.	19 5	29 5	13 8	23 8	17 9	27 9	12 9	22 9
5.	15 8	25 8	17 6	27 6	19 8	39 8	16 9	36 9
6.	17 8	47 8	14 7	24 7	18 5	38 5	19 7	49 7
7.	18 8	28 8	19 6	39 6	18 6	38 6	18 7	58 7

CAN YOU RACE AROUND THIS TRACK?



On this track start at number 10 and run around the track the way the arrow points. Add the 9 in the middle of the track to 10, then add 9 to 19, then add 9 to 16, and so on. When you have added 9 to every number on the track, erase the 9 and put 8 in the middle in place of it. Then go around again, adding 8 to every number. Change 8 to 7 and go around again. Keep making the middle number smaller each time until you get to 1, when the race is finished. In all, you must go around the track 9 times to finish the race.

The child who finishes the race with the fewest mistakes wins. Can you win it?

If you can go around the track 9 times in 7 minutes without making a mistake, you will find it easy to add columns like those on the next page.

ADDING COLUMNS OF FIGURES

Copy, and find the sums. Begin at the bottom of each column and add up. Check the answer by adding down:

In adding the first column, think, "3, 10, 14, 23."

1.	9	6	8	9	6	7	4	8
	4	5	4	5	4	7	6	0
	7	6	8	9	9	9	7	3
	3	7	8	7	9	6	9	9
2.	3	5	6	3	7	6	9	4
	4	8	9	4	8	4	1	5
	8	4	5	7	1	8	7	9
	9	9	7	6	4	7	4	9
3.	4	8	8	3	9	3	2	7
	9	0	5	8	5	7	6	6
	6	7	9	5	7	6	8	8
	9	4	3	9	7	5	5	6
4.	4	1	2	5	3	1	2	1
	0	4	4	0	1	3	4	4
	3	7	2	1	9	6	1	8
	5	3	9	2	5	2	2	1
	8	5	8	5	5	6	8	5
5.	3	2	4	3	4	3	3	1
	2	5	1	0	3	5	4	2
	5	9	8	5	6	0	2	9
	1	1	2	4	1	3	0	7
	8	6	2	8	2	9	7	6

DO YOU ADD OR SUBTRACT?

1. The boys in our class sold 85 tickets to the ball game, and the girls sold 63 tickets. How many tickets did the boys and girls sell all together?

2. Mary has 15¢. If she spends 8¢ for a ride on the bus, how much will she have left?

3. Peggy counted 17 roses in the garden. Her mother picked 9 roses. How many roses were left?

4. Dick sold papers for two weeks. He sold 53 papers the first week, and 84 papers the second week. How many papers did Dick sell in all?

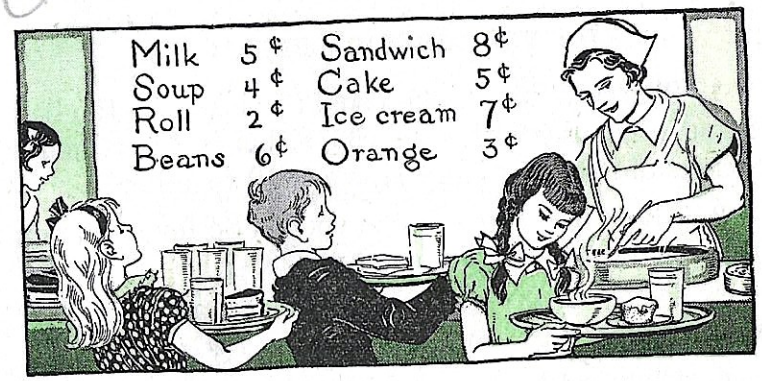
5. Bob wants to buy a pad for 5¢, a pencil for 3¢, some candy for 8¢, and a bus ticket for 7¢. How much money does Bob need?

6. Fred's mother baked 16 little cakes. She gave Fred 7 cakes to give to his friends. How many cakes did Fred's mother have left?

7. Alice made some paper flowers. She used 8 sheets of green paper, 6 sheets of blue paper, and 9 sheets of yellow paper. How many sheets of paper did Alice use in all?

8. There were 15 children who went on a picnic last Saturday. If 6 of them were boys, how many girls went on the picnic?

9. In Jack's school there are 420 children, and in Jim's school there are 375 children. How many children are there in the two schools?



BUYING LUNCH

1. Peggy bought a glass of milk, beans, a piece of cake, and an orange. How much did her lunch cost?

2. Billy had soup, a sandwich, and ice cream. How much did he have to pay?

3. Fred bought beans, a roll, cake, and an orange. Find how much Fred's lunch cost.

4. Jane bought milk, beans, cake, and ice cream. How much did her lunch cost?

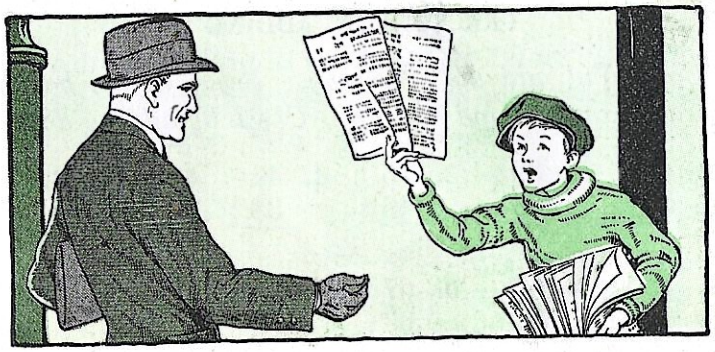
5. Ann had soup, a sandwich, and cake. Find how much Ann's lunch cost.

6. Frank had soup, a roll, beans, and an orange. How much did he spend for his lunch?

7. Mary bought milk, a sandwich, and an orange. How much did she have to pay?

8. Make up four lunches that cost 17¢ each.

To find the cost of several things, you add.



HOW TO CARRY IN ADDITION

1. John sold 25 papers yesterday and 37 papers to-day. How many papers did he sell in all?

You can add 25 and 37 in this way:

Write 37 under 25 and add up, like this:
Add 7 and 5, thinking "7, 12."
Write 2 under 7. Carry the 1 of 12 to the next column, and add it to 3, thinking "1, 4, 6."
Write 6. The sum is 62.

$$\begin{array}{r} 25 \\ 37 \\ \hline 62 \end{array} \text{ Sum}$$

You find that John sold 62 papers.
Check your answer by adding down, thinking "5, 12." Write 2. Carry 1 and add it to 2, thinking "1, 3, 6."
Since 62 is the sum again, you may call the work right.

2. John sold 29 papers Friday and 68 papers Saturday. How many papers did he sell all together?

3. John sold 98 papers last week and 84 papers this week. How many papers did Tom sell all together in two weeks?

PRACTICE IN ADDING

Copy and add the following. Begin at the bottom in each example and add up. Check by adding down:

1. 48 35	**2.** 39 66	**3.** 75 46	**4.** 44 38	**5.** 76 96	**6.** 47 48
7. 28 39	**8.** 67 54	**9.** 67 93	**10.** 54 77	**11.** 34 59	**12.** 27 69
13. 69 13	**14.** 96 37	**15.** 67 27	**16.** 28 53	**17.** 92 69	**18.** 76 94
19. 29 49	**20.** 89 95	**21.** 99 84	**22.** 45 29	**23.** 88 37	**24.** 37 56
25. 85 96	**26.** 73 69	**27.** 59 77	**28.** 76 15	**29.** 56 28	**30.** 59 98
31. 56 49	**32.** 37 55	**33.** 48 38	**34.** 78 14	**35.** 88 36	**36.** 67 74

37. Bob had 16¢. He earned 25¢ more to-day. How much money has Bob now?

38. Alice was in school 19 days last month and 22 days this month. How many days in all is that?

39. Ned paid 18¢ for his lunch and 25¢ for his sister's lunch. How much did Ned pay in all?

WORDS THAT TELL YOU TO ADD

1. Ann and Frank went to the store for their mother. They spent 25¢ for some oranges and 44¢ for a box of sugar. How many cents did they spend **all together?**

2. Billy saved $12 to buy a boat and Jack saved $10. How much did **both** boys save?

3. Jane studied spelling 15 minutes in school and 15 minutes after school. How many minutes **in all** did she study spelling?

4. The girls in our class sold 78 tickets for the school fair and the boys sold 93 tickets. How many tickets **in all** did our class sell?

5. Joe read 26 pages in his new book yesterday, 15 pages this morning, and 19 pages this afternoon. How many pages did he read **all together?**

6. Yesterday Jim and Tom went to the woods for nuts. Jim found 65 nuts and Tom found 73. How many nuts did **both** boys find?

7. Ed's mother made 48 sugar cookies and 35 nut cookies. How many cookies did she make **all together?**

8. Jack caught 15 fish and Ted caught 11 fish. How many fish did they catch **in all?**

9. To-day Joe picked 32 apples and Dick picked 39 apples. How many apples did **both** boys pick?

In the problems above, words like **both, in all,** and **all together** tell you to **add.**

HOW TO CARRY IN COLUMN ADDITION

1. Last week Ann earned 18¢ by helping mother, 25¢ by doing errands for Aunt Jane, and 47¢ by picking berries. How much did she earn in all?

You must add 18, 25, and 47.

Adding up, think "7, 12, 20." Write 0. Carry 2 to the next column and add it to 4, thinking "6, 8, 9." Write 9. The sum is 90.

$$\begin{array}{r} 18 \\ 25 \\ 47 \\ \hline 90 \end{array}$$

Hence Ann earned 90¢ in all.

Check by adding down, thinking "8, 13, 20." Write 0. Carry 2 to the next column and add it to 1, thinking "3, 5, 9." The sum is 90 again, so the work is called right.

2. Ann put 25¢ in the bank one week, 30¢ in the bank the next week, and 35¢ the third week. How much did Ann put in the bank in three weeks?

3. Ann spent 45¢ for a book, 12¢ for candy, and 25¢ for a ticket to the moving pictures. How much did Ann spend in all?

PRACTICE IN COLUMN ADDITION

Add the following and check the work:

1.	24	39	35	48	37	56	90
	35	13	30	12	54	55	44
	48	74	26	84	19	37	36
2.	67	26	49	16	79	28	22
	24	18	33	18	26	83	40
	11	38	10	53	35	41	19
3.	65	26	72	37	49	37	20
	13	58	48	61	17	35	44
	17	41	69	63	28	12	38
4.	19	92	28	86	19	15	46
	70	79	45	96	71	30	18
	54	16	21	68	81	38	42
5.	49	16	59	15	35	36	85
	82	35	47	27	73	20	21
	71	54	10	26	38	37	14
6.	68	66	14	25	46	33	59
	10	21	37	17	36	18	10
	82	76	16	29	29	28	44
	61	26	15	21	18	37	61

PRACTICE IN ADDING

Add the following and check the work:

1. 49 83	2. 48 72	3. 57 74	4. 87 57	5. 87 73	6. 97 85
7. 96 19	8. 76 58	9. 36 84	10. 56 55	11. 88 29	12. 99 57
13. 46 67	14. 58 84	15. 89 64	16. 27 89	17. 89 45	18. 57 68
19. 37 51	20. 61 45	21. 44 67	22. 59 33	23. 99 26	24. 49 68
25. 97 42 78	26. 29 87 78	27. 48 53 93	28. 13 52 65	29. 88 15 79	30. 87 61 55
31. 87 63 84	32. 48 54 49	33. 94 12 64	34. 93 63 36	35. 65 92 26	36. 89 19 47
37. 92 44 51 14	38. 27 94 13 68	39. 30 85 12 73	40. 47 88 40 58	41. 83 75 56 35	42. 33 26 72 27

WHY GRACE HAD TROUBLE IN ADDING

Ted counted the stamps in his stamp book. He asked Grace to write down how many stamps he had on each page. There were 27 stamps on the first page, 8 stamps on the second page, 36 stamps on the third page, and 5 stamps on the fourth page. Grace wrote the numbers as shown at the right.

The Wrong Way

27
8
36
5

Grace could not add her numbers because the figures were not in columns. Ted put the units in one column and the tens in another, as shown at the right. Then the numbers could be added.

The Right Way

27
8
36
5
76

Adding the units, think "5, 11, 19, 26." Write 6 and carry 2. Then think "2, 5, 7." Write 7.
How many stamps did Ted have?

Exercises

Copy each example. Then add and check:

1. 62 4 27	2. 46 9 23	3. 35 8 17	4. 12 29 5	5. 57 18 8
6. 27 8 34 3	7. 3 15 9 26	8. 46 2 25 7	9. 3 69 16 4	10. 23 6 28 7

JOHN HELPS IN THE STORE

1. Last Saturday John helped his father in the store. Mrs. Green bought a quart of milk for 13¢, a pound of coffee for 28¢, and a can of peaches for 26¢.

CASH SALE			
Clerk: John	Date: Aug. 11		
1	quart milk		13
1	pound coffee		28
1	can peaches		26
			67

John wrote a *sales slip* like the one at the left which he added up and gave to Mrs. Green. This sales slip tells what things she bought and the cost of each thing. It also shows that these things cost 67¢ in all. On her way out of the store Mrs. Green paid 67¢ to the girl at the desk.

2. Billy's mother bought a dozen eggs for 32¢, a loaf of bread for 8¢, and a can of corn for 15¢. Write the sales slip and add it to show how much Billy's mother must pay.

JOHN MAKES OUT SALES SLIPS

1. John also wrote these sales slips. Add each one. Be sure to check by adding down.

CASH SALE			
Clerk John	Date Aug. 11		
1	box sugar		45
1	can beans		14
1	bag potatoes		28

CASH SALE			
Clerk John	Date Aug. 11		
1	can pears		18
1	dozen eggs		32
1	pound butter		35

Make sales slips for ex. 2 to 5 and add them:

2. Tom's mother bought a dozen eggs for 32¢, a pound of coffee for 28¢, and a can of corn for 15¢.

3. Alice bought a can of pears for 18¢, a loaf of bread for 8¢, and a dozen eggs for 32¢.

4. Bobby bought a box of sugar for 45¢, a pound of butter for 35¢, and a can of peaches for 16¢.

5. Mrs. Lee bought a loaf of bread for 8¢, a bag of potatoes for 28¢, and a box of sugar for 45¢.

6. Make up five problems and find the answers.

These numbers were on other slips that John wrote. Copy, add, and check the work:

7.							
	13	17	25	17	13	7	54
	49	26	6	15	6	36	15
	6	8	26	8	54	24	17

ADDING THREE-FIGURE NUMBERS

1. Mary got two books for her birthday. One book has 123 pages and the other has 149 pages. How many pages all together has Mary to read?

You must add 123 and 149.

Add the first column, thinking "9, 12." Write 2 and carry 1. Add the second column, thinking "1 (carried), 5, 7." Write 7. Then add the last column, thinking "1, 2," and write 2.

The sum is 272. Hence Mary has 272 pages to read. Check the work by adding down.

```
 123
 149
 272
```

In the problem above, you had to carry 1 from the units' column to the tens' column.

2. Tom also has two new books. One of his books has 118 pages and the other has 114 pages. How many pages in all does Tom have to read?

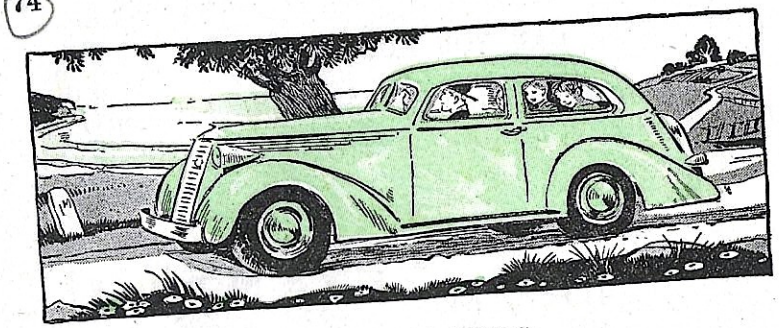
3. Last year Bobby had 245 stamps. This year he got 135 stamps for his birthday. How many stamps has Bobby now?

CAN YOU ADD THESE?

Add without copying, writing only the answer on folded paper. Check each answer by adding down:

1.	614	458	349	758	327	245
	278	319	231	223	467	515
2.	236	413	649	238	258	129
	548	367	345	327	236	252
3.	115	807	174	428	133	432
	557	149	6	108	139	518
4.	608	546	307	215	637	209
	34	249	156	438	124	223
5.	569	218	144	439	457	626
	7	465	717	449	5	344
6.	407	126	719	352	629	116
	178	126	38	9	204	315
7.	234	503	437	175	211	375
	59	318	53	816	649	9

NOTE. To add or subtract without copying, the pupil should place a sheet of paper with its edge under the first row of examples and write the answers on the paper. He should then fold the answers under, placing the folded edge under the second row, and so on.



VACATION TRIPS

Bob's father takes his family on automobile trips in the summer.

1. On one trip they drove 225 miles one day and 268 miles the next day. How many miles did they drive in the two days?

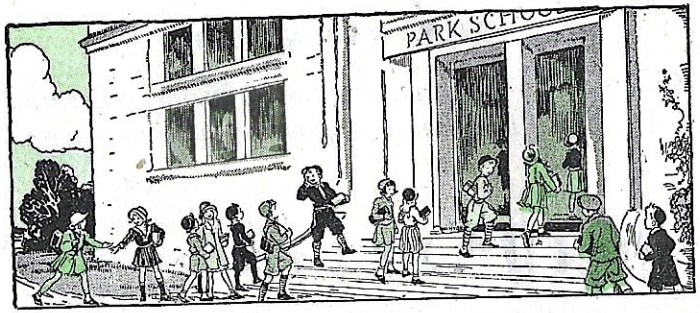
2. One day they went to see Uncle Tom. They drove 125 miles in the morning and 149 miles in the afternoon. How many miles was that in all?

3. Uncle Tom has a chicken farm. He has 325 white chickens and 545 brown chickens. How many chickens has he all together?

4. Bob counted automobiles one day when he was riding. He counted 258 cars and 134 trucks. How many automobiles did he count in all?

Add these numbers. Check the work by beginning at the top and adding down:

5.	6.	7.	8.	9.
259	314	619	449	137
728	367	367	209	425



CARRYING FROM THE TENS' COLUMN

1. There are 275 boys and 382 girls in our school. How many pupils are there in our school?

Think "2, 7." Write 7 under 2. Think "8, 15." Write 5 under 8 and carry 1 to the next column. Then think "1 (carried), 4, 6." Write 6.

There are 657 pupils in our school.

How can you check this problem? Check it.

275
382
657

In this problem you carried 1 from the tens' column to the hundreds' column. Do you carry from the units' column to the tens' column?

2. Our school bought 144 new arithmetics and 270 new readers last September. How many books in all did the school buy?

3. In the Washington School there are 290 boys and 385 girls. How many pupils in all are there in the Washington School?

4. Peggy was in school 183 days last year and 195 days this year. How many days in all was that?

PRACTICE IN ADDING

Add without copying, writing only the answers on folded paper. Check each answer by adding down:

1.	163 546	281 493	544 262	258 551	273 633	445 72
2.	691 174	512 394	471 252	276 263	673 92	471 377
3.	392 391	160 482	284 75	225 592	132 172	184 581
4.	491 355	187 342	165 273	343 562	193 784	560 299
5.	542 385	451 78	466 462	250 150	454 382	695 41
6.	453 161	182 667	244 90	273 145	697 31	385 294
7.	430 87	774 184	363 55	392 563	351 491	626 83
8.	683 233	835 91	384 123	266 470	292 24	284 255

PROBLEMS AND PRACTICE

1. Ned earned $10 and Tom earned $7. How much more did Ned earn than Tom?

2. John put 24¢ in his bank one week, 29¢ the next week, and 33¢ the third week. How much did John put in his bank all together?

3. For the school party Mary made 14 boxes of candy and Jane made 8 boxes of candy. How many more boxes of candy did Mary make than Jane?

4. In her garden Peggy's mother picked 18 red roses, 20 white roses, and 16 yellow roses. How many roses in all did she pick?

Add without copying and check your answers:

5.	341 378	349 245	264 484	170 450	344 317	126 526
6.	342 394	472 77	408 124	745 64	193 231	168 8
7.	319 579	615 326	185 372	329 8	325 615	294 40
8.	108 743	317 55	662 176	574 293	782 151	603 9
9.	390 226	258 6	427 81	272 565	457 528	546 135

★THE SCHOOL PICNIC

1. There were 59 boys and 66 girls who went to the school picnic. How many children all together went to the picnic? 125

2. A school bus took 18 boys and 27 girls to the picnic. How many children were in that bus? 45

3. Another bus took 16 boys and 17 girls. How many children were in that bus? 33

4. The third bus took 23 boys and 19 girls. How many children were in that bus?

5. How many children in all went in busses?

6. Miss Brown took 5 children to the picnic in her car. Was any child in ex. 1 left behind?

7. At the picnic each child was given one red apple or one yellow apple. There were 74 red apples and 54 yellow apples. Were there enough apples in all so that each child could have one? Were there any apples left over?

WATCHING ZEROS IN ADDITION

Add 604 and 206. Be sure to look out for the zeros. Sometimes zeros make trouble when you add.

Add the first column, thinking "6 + 4 = 10." Write 0 and carry 1. Add the next column, thinking "1 + 0 + 0 = 1." Write 1. There is nothing to carry. Then think "2 + 6 = 8." Write 8.

The sum is 810. Check the work.

```
 604
 206
 810
```

Practice with Zeros

Add without copying, and check your work:

1. 350 490	2. 347 503	3. 400 580	4. 402 208	5. 540 269
6. 650 200	7. 105 425	8. 203 237	9. 963 92	10. 300 470
11. 757 203	12. 992 67	13. 307 609	14. 323 17	15. 204 346
16. 505 405	17. 306 209	18. 180 432	19. 456 352	20. 107 803
21. 308 309	22. 11 493	23. 316 291	24. 160 676	25. 201 409
26. 124 406	27. 290 680	28. 585 320	29. 160 140	30. 608 303
31. 529 201	32. 509 205	33. 206 707	34. 268 540	35. 590 293

ADDING DOLLARS AND CENTS

1. Fred, Joe, and Billy have been saving to buy a radio set. Fred has saved \$3.31, Joe has saved \$4.50, and Billy has saved \$.75. How much have the boys saved all together?

Write the numbers so that the decimal points are in a straight line under one another. Write the sign \$ only before the first number.

Add the dollars and cents just like other numbers and place the decimal point in the sum under the other decimal points. Check the work.

\$3.31
4.50
.75
\$8.56

You see that the children have \$8.56 for their radio set.

Copy and add. Check your work:

2.	\$3.26 4.59	\$4.54 .72	\$2.47 1.43	\$1.52 8.17	\$2.50 .86
3.	\$4.08 4.78	\$8.70 .90	\$3.97 4.32	\$3.25 8.35	\$4.73 .73
4.	\$9.28 .45	\$6.75 3.60	\$1.08 .89	\$3.55 1.64	\$2.54 .09
5.	\$1.16 .60 3.72	\$4.59 .34 .03	\$6.08 1.12 .62	\$6.41 .94 1.91	\$5.33 1.22 2.28
6.	\$1.22 3.30 1.97	\$4.15 .27 .28	\$1.33 1.64 6.82	\$1.03 .49 1.28	\$5.01 1.93 .41

ADDING DOLLARS AND CENTS

Copy and add. Check the work:

1.	\$4.64 3.61 1.22	\$2.59 5.14 1.01	\$1.23 4.90 3.85	\$5.27 3.14 1.32	\$2.96 1.42 6.01
2.	\$4.13 2.23 2.34	\$2.75 1.50 2.30	\$1.47 4.30 .32	\$2.07 .76 3.01	\$4.38 .04 .48
3.	\$4.00 3.78 1.91	\$1.53 4.52 1.92	\$3.15 2.56 3.09	\$1.52 1.64 .21	\$5.28 1.15 4.43
4.	\$4.09 3.72 1.09	\$5.70 1.01 2.31	\$3.66 .40 5.33	\$8.26 .33 .33	\$3.29 1.25 4.12
5.	\$3.12 1.80 .45	\$1.29 5.14 1.42	\$3.94 4.95 2.00	\$3.67 2.01 1.13	\$7.05 1.82 .92
6.	\$1.04 .38 2.11 1.10	\$2.41 .95 2.33 1.00	\$1.82 1.23 3.11 .21	\$4.02 .46 .33 .12	\$5.23 1.37 .23 1.11

DIAGNOSTIC TEST

If you have trouble with the exercises in any row, you need more practice on work of that kind. The Help Pages tell you where to find it.

Add the following:

							HELP PAGES
1.	85 93	11 43	94 73	92 22	23 53	85 64	45–47
2.	88 73	37 39	64 28	98 37	74 39	59 15	64, 68
3.	9 2 8 1	8 9 4 2	4 3 9 8	4 3 3 9	8 8 5 9	2 1 5 7	51 56, 60
4.	12 73 12	60 47 32	26 16 66	97 35 46	29 47 45	86 11 49	54 66–68
5.	169 721	456 107	346 526	533 19	214 57		72–74
6.	776 132	277 141	176 280	642 277	276 433		75–77
7.	\$3.30 2.80	\$2.03 3.07	\$8.92 6.15	\$4.09 1.64			79, 80

CHAPTER III

SUBTRACTION

HOW WELL CAN YOU SUBTRACT?

1. Jack does not know what number is pinned on his back. He chooses Alice to help him find out, asking, "Is it 9?" Alice answers, "No, it is 2 less than 9." Jack says, "Then it is 7."

Then 8 is pinned on Jack's back. He chooses Fred to help, asking, "Is it 5?" Fred answers, "No, it is 3 more than 5." Then Jack says, "It is 8."

Other numbers are pinned on Jack's back and he guesses each until he makes a mistake. Then some other child takes his place. Play this game.

2. Take the subtraction test on page 39. If you have trouble with the test, make a set of cards for the 100 subtraction facts, like the addition cards shown on page 33. Then have one of your friends test you with these cards. Put the cards that you miss in a pile and practice on them.

WORDS THAT TELL YOU TO SUBTRACT

1. Our class had a picnic last spring. There were 13 girls and 9 boys who went. **How many more** girls **than** boys went to the picnic?

2. Fred saved $9 and Mary saved $13. **How many more** dollars did Mary save **than** Fred?

3. Alice bought a small doll for 17¢ and a doll's dress for 9¢. **How much more** did she pay for the doll **than** for the dress?

4. At the school store Jane bought a pencil for 10¢ and Alice bought one for 5¢. **How much less** did Alice pay **than** Jane?

5. Betty did 15 problems and Ann did 9 problems. **How many less** problems did Ann do **than** Betty?

6. George and Frank went fishing yesterday. George caught 8 fish and Frank caught 14 fish. **How many less** fish did George catch **than** Frank?

7. Joe is 9 years old and his little sister is 4 years old. **How much older** is Joe **than** his sister?

8. Jack is 4 feet tall and his father is 6 feet tall. **How much shorter** is Jack **than** his father?

9. The giant in the circus is 9 feet tall. Tom's father is 6 feet tall. **How much taller** is the giant **than** Tom's father?

To answer questions like **how many more than** or **how many less than,** you **subtract.**

HOW MANY ARE LEFT?

1. Joe's father gave him 15¢. Joe bought some marbles for 8¢. How much did he have **left?**

2. Mary Ann's mother made 12 little cakes this morning. If the children ate 6 of them for lunch, how many little cakes did her mother have **left?**

3. Ed's mother sent him to the store with 15¢. Ed bought a loaf of bread for 9¢. How much money did he have **left?**

4. Billy had 16 rabbits. If he gave 7 rabbits to Tom, how many did he have **left?**

To find how many are left, you subtract.

PROBLEMS

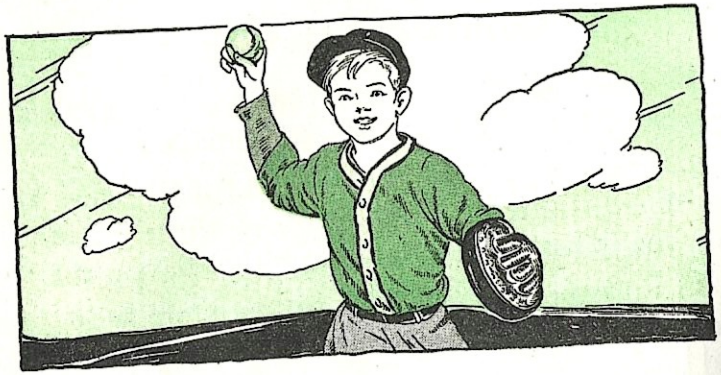
1. Ann saw 12 birds in a tree. If 4 birds flew away, how many birds were left?

2. Fred is 8 years old and Jack is 14 years old. How much younger is Fred than Jack?

3. Jane has read 16 pages in her new book, but Mary has read only 8 pages. How many more pages has Jane read than Mary?

4. Tom and Bob went fishing. Tom had a line 11 feet long and Bob had one 9 feet long. How much longer was Tom's line than Bob's?

5. Betty had 15¢. She spent 6¢ for a red pencil. How many cents did she have left?



SUBTRACTING TWO-FIGURE NUMBERS

1. Fred's father gave him 67¢. Fred spent 53¢ for a baseball. How many cents had he left?

Subtract 53 from 67. Your teacher will tell you by which of the ways below to do it.

First Way. Think "3 and **4** are 7." Write 4.
Think "5 and **1** are 6." Write 1.
The difference is 14. So Fred had 14¢ left.

Second Way. Think "3 from 7, **4**." Write 4.
Think "5 from 6, **1**." Write 1.
The difference is 14. So Fred had 14¢ left.

$$\begin{array}{r} 67 \\ 53 \\ \hline 14 \end{array}$$

Subtract these and make stories about each one:

2.	96	39	57	58	77	46
	43	26	16	25	43	25
3.	97	49	89	78	98	85
	12	18	51	32	76	30

PROBLEMS AND PRACTICE

1. Jane has 25¢ to spend. If she spends 12¢ for a doll, how many cents will she have left?

2. There are 45 children in our class. 31 of them came to school to-day. How many did not come?

3. John's father drove his car 160 miles yesterday and 275 miles to-day. How many miles more did he drive to-day than yesterday?

Subtract. Check your answers by adding up:

4.	59	86	34	98	467	845	329
	26	34	12	54	135	235	217
5.	72	85	68	98	699	989	855
	32	13	25	80	143	172	641
6.	77	70	73	83	999	658	543
	61	40	23	30	153	523	311
7.	65	94	56	98	577	766	864
	50	72	24	64	123	165	523
8.	77	56	99	86	987	956	758
	53	43	49	44	475	351	436
9.	94	68	59	78	247	679	793
	34	32	45	41	126	201	582

CAN YOU DO ALL THESE?

1. Ted wants to sell 125 papers this week. He has now sold 70 papers. How many more papers does he need to sell?

You subtract 70 from 125, as shown here. How many more papers must Ted sell this week?

$$\begin{array}{r} 125 \\ 70 \\ \hline 55 \end{array}$$

2. In the Hill School there are 166 pupils. If 94 of them are girls, how many boys are there?

Subtract. Check your answers by adding up:

3.	148 63	115 75	178 96	89 18	95 4	82 42	75 71
4.	137 85	139 64	165 74	97 63	78 72	90 30	57 34
5.	128 50	186 94	118 38	65 40	88 4	58 16	71 61
6.	108 45	153 63	136 92	58 6	99 97	88 27	57 35
7.	114 44	139 43	157 84	79 25	50 20	98 38	87 5
8.	169 82	147 81	105 72	69 66	29 7	67 40	97 82

EVERYDAY PROBLEMS

In each problem first tell if you add or subtract to get the answer. Then work the problem.

1. Jack has saved 69¢. He buys a ball that costs 55¢. How much money has he left?

2. Jim and Ed want to buy a game that costs 88¢. They put their money together and find they have 37¢. How much more do they need?

3. Betty has two new story books. One book has 54 pages and the other has 44 pages. Betty has read both books. How many pages has she read?

4. Dick earned 53¢. Jack earned 32¢. Dick earned how much more than Jack?

5. Mother made 24 little white cakes and 13 little yellow cakes for Peggy's birthday party. How many cakes in all did mother make?

6. Fred has 78¢ in his bank. He takes out 25¢ to buy himself some paper and pencils for school. How much money is left in the bank?

7. Ann wants to buy for her doll a pair of shoes that will cost 46¢ and a hat that will cost 30¢. How much will both cost?

8. Mother gave Ed 32¢ and father gave him 25¢. How much did both give him?

9. Jim did 25 problems while Ann was doing 13. Ann did how many less than Jim?

THE SCHOOL BANK

These children are learning how to save. They put the money they save in the school bank. Do you have a school bank in your school?

1. In September Tom put 32¢ in the school bank. In October he put in 47¢ and in November he put in 15¢. In the three months Tom put . . .¢ in all in the school bank.

2. Ed had 97¢ in the school bank. To-day he took out 25¢. Ed had . . .¢ left in the bank.

3. This week Mary saved $.19. She put this in the bank with $1.75 her father gave her. Mary put $. . . in the bank this week.

4. On her birthday Jane's grandfather gave her $12. She bought a new coat for $7 and put the rest of the money in the school bank. Jane put . . . dollars in the school bank.

NOTE TO TEACHER. Caution pupils never to write in their books to fill in blank spaces.

GAINING SKILL IN SUBTRACTION

1. Alice weighed 81 pounds last year. Now she weighs 87 pounds. How many pounds has she gained?

2. There were 185 school days last year, and Jack was in school 174 days. How many school days was Jack not in school?

3. Tom has saved $24. He wants to have $35 so that he can go to camp next summer. How much more does Tom need to save?

Subtract. Check your answers by adding up:

4.	48	87	89	87	116	635	123
	12	35	18	82	23	513	62
5.	99	89	78	58	828	133	176
	96	7	4	15	716	40	94
6.	37	49	45	39	136	567	154
	4	25	42	8	72	203	93
7.	65	53	94	52	117	169	105
	3	53	34	2	41	74	34
8.	49	48	67	99	786	178	128
	34	28	64	22	522	84	35
9.	79	76	35	67	126	148	147
	73	34	4	56	51	73	62

A DAY AT THE SEASHORE

1. Father and mother drove Bob and Betty to the seashore, which is 56 miles from their house. How many miles did they drive going there and back?

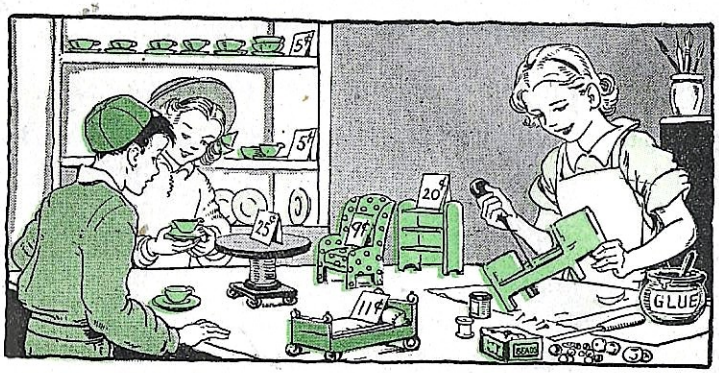
2. In the morning they went digging for clams. Mother found 25 clams, father found 53 clams, Bob found 15 clams, and Betty found 9 clams. How many clams did they find all together?

3. Father caught 14 fish, Betty caught 5 fish, mother caught 7 fish, and Bob caught 2 fish. How many fish in all did they catch?

4. Bob found 16 shells. Betty found 32 shells. How many more shells did Betty find than Bob?

5. They ate 17 sandwiches. The children ate 9. How many sandwiches did their parents eat?

6. At supper time little sand birds ran along the edge of the water. Betty counted 21 birds, Bob saw 35. Bob saw how many more than Betty?



AT ANN'S SHOP

Ann makes things for dolls' houses. She sells them to her friends.

1. Jane bought a doll's bed from Ann for 11¢, a chair for 9¢, a rug for 7¢, and a cup for 5¢. How much did Jane pay for them all?

2. Bobby had 90¢. He spent 48¢ at Ann's shop to buy some things for his sister. How much money did Bobby have left?

3. Alice has saved 19¢ to spend at Ann's shop. She wants to buy a doll's table that costs 25¢. How many more cents does she need to save?

4. Peggy bought 4 cups, 4 saucers, 6 plates, and 4 bowls. How many things did she buy in all?

5. Mary bought the things for her doll's house at a store. She paid 85¢ for them. Ann would have sold Mary the same things for 60¢. How much would Mary have saved by buying from Ann?

PRACTICE IN SUBTRACTING

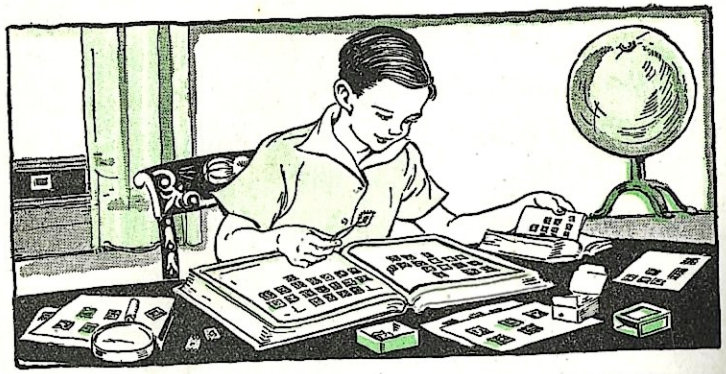
Subtract the following and check the work:

1.	91 54	143 78	154 98	148 79	171 99	137 68
2.	46 18	114 56	111 96	151 66	143 98	175 89
3.	85 49	124 75	136 59	134 98	127 48	162 68
4.	80 28	103 86	115 77	131 72	152 55	115 76
5.	74 57	115 46	122 94	104 77	133 36	134 45
6.	63 29	183 95	131 35	145 47	112 38	111 48
7.	68 39	113 24	110 61	134 69	120 31	100 62
8.	92 39	161 82	145 58	136 47	111 57	145 99
9.	82 7	30 3	21 8	27 9	80 7	40 6

WHICH NUMBER IS RIGHT?

Tell which number is right:

1. A loaf of bread costs how much?
   45¢ 10¢ 90¢ 28¢
2. How much do 6 oranges cost?
   2¢ 75¢ 15¢ 60¢
3. Jane paid how much for a ball?
   $1.10 65¢ 90¢ 5¢
4. How much did Betty's dress cost?
   $75 $100 $2.50 $.14
5. A stick of candy costs how much?
   18¢ 1¢ 40¢ 67¢
6. How much did Mary's gloves cost?
   $16 $24 $9 $1
7. Fred paid how much for a ruler?
   15¢ 50¢ 91¢ $2.00
8. Bob's shoes cost how much?
   $25 $4 $50 10¢
9. How much did Tom's skates cost?
   $25 $18 $.30 $1.68
10. How much does a newspaper cost?
    3¢ 25¢ 17¢ 19¢
11. How much does a box of crackers cost?
    50¢ 10¢ 75¢ 33¢



SUBTRACTING THREE-FIGURE NUMBERS

Ned has a stamp book that will hold 675 stamps. He has put 238 stamps in the book. How many more stamps will the book hold?

You must subtract to find the answer. Your teacher will tell you which method to use. Always use the same method.

Additive Method. Since 5 is less than 8, think 15 instead of 5. Then think "8 + 7 = 15." Write 7. Carry the 1 of 15 and add it to 3, which makes 4. Think "4 + 3 = 7." Write 3. Then think "2 + 4 = 6." Write 4.

```
 675
 238
 437
```

The book will hold 437 more stamps. Check the work.

Take-Away Method. Since 5 is smaller than 8, borrow 1 from 7 and think of it as written before 5, thus making 15. Think "8 from 15, **7.**" Write 7.

Since you borrowed 1 from 7, think of 7 as 6. Next think "3 from 6, **3.**" Write 3. Then think "2 from 6, **4.**" Write 4.

```
 675
 238
 437
```

The book will hold 437 more stamps. Check the work.

PRACTICE IN SUBTRACTING

Subtract without copying, writing the answers on folded paper. Check the work by adding up:

1. 783 − 245	2. 686 − 149	3. 954 − 519	4. 643 − 316	5. 373 − 119
6. 587 − 468	7. 594 − 157	8. 491 − 379	9. 981 − 358	10. 866 − 318
11. 874 − 125	12. 781 − 37	13. 690 − 573	14. 772 − 633	15. 350 − 107
16. 261 − 42	17. 771 − 144	18. 782 − 515	19. 470 − 131	20. 595 − 367
21. 865 − 206	22. 943 − 404	23. 682 − 344	24. 496 − 119	25. 764 − 236
26. 591 − 373	27. 893 − 128	28. 952 − 437	29. 497 − 269	30. 693 − 417
31. 670 − 22	32. 750 − 146	33. 866 − 317	34. 792 − 356	35. 374 − 258
36. 588 − 259	37. 272 − 119	38. 595 − 208	39. 460 − 315	40. 891 − 245

PROBLEMS AND PRACTICE

1. Father paid $675 for his old car and $568 for his new car. How much more did he pay for the old car than for the new one?

2. Tom has 246 chickens. Ed has 282 chickens. How many more chickens has Ed than Tom?

Subtract. Check the work by adding up:

3.	344 228	953 716	267 39	241 235	127 8	960 912
4.	195 159	466 147	111 4	875 868	680 643	871 246
5.	372 329	763 238	293 174	314 9	653 647	491 19
6.	140 5	954 27	786 759	834 825	582 466	665 207
7.	891 323	752 144	280 47	995 956	272 8	420 19
8.	190 121	184 6	741 217	378 229	431 408	569 27
9.	282 36	795 68	153 14	372 65	560 148	970 105

SOMETHING NEW IN SUBTRACTION

1. Ann counted 475 boys and 393 girls in a parade. How many more boys than girls were there?

Additive Method. Think "3 + **2** = 5." Write 2. Think "9 + **8** = 17." Write 8. Next think "1 (carried) + 3 = 4." Then think "4 + 0 = 4." You do not have to write the zero.

```
 475
 393
----
  82
```

There are 82 more boys than girls. Check by adding up.

Take-Away Method. Think "3 from 5, **2**." Write 2. Since you cannot take 9 from 7, borrow 1 from 4 to make 17. Think "9 from 17, **8**." Write 8. Since you borrowed 1 from 4, think of 4 as 3. Then think "3 from 3, 0." You do not have to write the zero.

```
 475
 393
----
  82
```

There are 82 more boys than girls. Check by adding up.

Subtract. Check the work by adding up:

1.	717 265	928 664	501 61	452 291	689 396	829 583
2.	568 287	809 252	879 491	908 441	636 165	427 152
3.	556 173	901 330	857 661	637 484	538 392	947 777
4.	807 545	946 762	400 270	916 521	449 196	763 592
5.	835 371	629 244	779 389	838 552	700 190	814 231

FINDING THE DIFFERENCE

1. Tom is 12 years old and Bobby is 8 years old. What is the **difference** in their ages?

2. Tom is 58 inches tall and Bobby is 46 inches tall. What is the **difference** in their heights?

3. Tom weighs 86 pounds and Bobby weighs 52 pounds. Find the **difference** between Tom's weight and Bobby's weight.

4. Tom paid 25¢ for a ticket to the school play. Bobby paid 15¢ for his ticket. What is the **difference** between the prices of these tickets?

5. Tom wants to buy an overcoat that costs $16. He has saved $12. His father says he will pay the **difference**. How much will his father pay?

6. What is the **difference** between 263 and 347?

To find the difference between two numbers, subtract.

PRACTICE IN SUBTRACTING

Subtract without copying. Check the work:

1.	305 163	616 332	728 156	747 87	764 293	947 276
2.	346 93	715 462	924 482	518 322	409 172	534 44
3.	809 117	779 388	528 33	658 467	945 551	269 76
4.	638 264	408 45	683 393	857 584	239 54	517 141
5.	731 315	461 119	347 65	380 322	256 251	820 415
6.	735 184	187 179	970 163	195 29	985 467	316 8
7.	178 161	904 613	242 9	813 471	483 477	622 461
8.	590 148	639 98	350 149	519 282	861 519	312 4

WATCHING ZEROS IN SUBTRACTION

1. Subtract 509 from 716.

Additive Method. Think "9+7=16." Write 7. Carry 1 and add it to 0, which makes 1. Think "1+0=1." Write 0. Think "5+2=7." Write 2. The difference is 207. Check the work.

```
 716
 509
 207
```

Take-Away Method. Since you cannot take 9 from 6, borrow 1 from 1 to make 16. Then think "9 from 16, 7." Write 7. Since you borrowed 1 from 1, think of 1 as 0. Then think "0 from 0, 0." Write 0. Think "5 from 7, 2." Write 2. The difference is 207. Check the work.

```
 716
 509
 207
```

Subtract without copying. Check the work:

2.	916 309	412 206	714 505	617 308	514 307	411 303
3.	904 484	907 73	200 190	407 57	806 642	568 165
4.	513 406	908 78	755 80	601 231	808 323	918 609
5.	166 76	714 406	475 175	703 253	545 70	314 909
6.	717 209	609 482	815 606	400 340	805 35	704 604
7.	212 203	633 390	926 418	309 69	913 70	[illegible]

CAN YOU ADD ALL THESE?

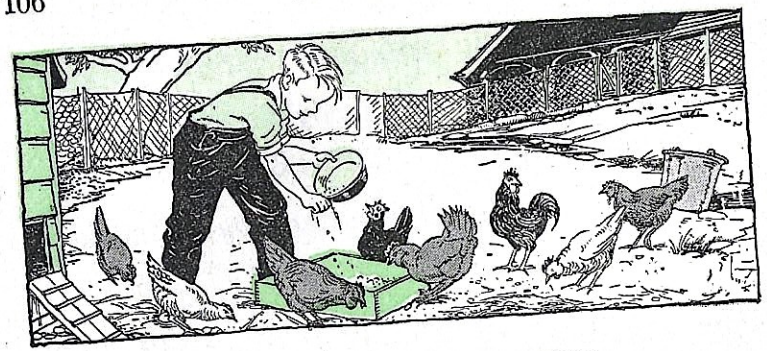
1. Beginning with 1, count by 2's to 29.
2. Beginning with 2, count by 3's to 29.

Find the sums, adding up. Check by adding down:

3.	41 36 22	34 23 21	34 25 32	69 34 23	34 55 31	55 14 12	17 63 25
4.	52 62 41	24 12 36	25 10 59	77 17 37	67 15 58	28 71 13	43 32 18
5.	7 3 6 1	9 5 0 3	4 6 5 2	9 5 4 1	4 1 8 7	1 8 4 9	9 6 6 9
6.	627 241	239 34	473 393	456 143	397 92	408 246	

Copy and add. Check the work:

7. $1.16+$.49+$1.23
8. $8.13+$1.28+$.48
9. $1.63+$1.92+$1.53
10. $2.55+$5.24+$1.60
11. $4.25+$4.00+$.47
12. $2.05+$.80+$.90
13. $2.83+$1.01+$4.25
14. $3.34+$.29+$1.33
15. $6.32+$2.20+$1.18
16. $1 41+$7.33+$2.18



GRANDFATHER'S CHICKENS

1. In summer Jack feeds the chickens on his grandfather's farm. This summer there are 75 brown chickens, 34 black ones, and 56 white ones. How many chickens has Jack's grandfather in all?

2. Jack gathers the eggs. To-day he got 110 eggs and yesterday, 87 eggs. How many eggs is that?

3. Monday they sent 228 eggs to the city and Friday they sent 264 eggs. How many more eggs did they send on Friday than on Monday?

4. Jack's grandfather had 165 chickens in the summer, but he sold 78 of them in the fall. How many chickens did he have left then?

★5. Jack went to the store for his grandfather. He spent $.75 for sugar, $1.90 for chicken feed, and $4.70 for wire for the chicken house. How much did he spend in all?

★6. Make up another problem about Jack and use addition in it.

SAVING MONEY FOR CHRISTMAS

1. Betty is saving to buy her sister a doll for Christmas. She has saved $1.49. The doll costs $3.75. How much more must Betty save?

Write the numbers so that the decimal points are under each other.

Subtract dollars and cents just as you subtract any other numbers. Place the decimal point in the answer under the other decimal points.

	$3.75
−	1.49
	$2.26

You see that Betty must save $2.26 more.

Check the work to make sure that the answer is right.

2. Billy wants to buy George an airplane that costs $4.65. He has $2.48 now. How much more money does he need to get?

3. Peggy wants to buy Alice a book for $1.25. She now has $.75. How much more money does Peggy need to buy the book?

4. George is earning money to buy a pair of skates. The skates cost $3.49. George now has $2.65. How much more does he have to earn?

5. Tom has saved $5.75. He buys a pair of skates for $3.95. How much money has he left?

6. John can buy a red sweater for $5.49 or a brown one for $3.98. How much less does the brown sweater cost than the red one?

SUBTRACTING DOLLARS AND CENTS

Subtract. Check the work by adding up:

1.	\$4.25 2.73	\$4.39 4.06	\$8.00 2.20	\$3.76 1.36	\$4.86 2.59
2.	\$7.09 .53	\$9.07 4.00	\$6.17 3.09	\$9.09 7.37	\$7.25 3.64
3.	\$2.95 .08	\$8.30 3.70	\$6.66 1.05	\$6.58 1.97	\$7.70 2.68
4.	\$3.09 .42	\$5.72 2.12	\$3.60 3.35	\$6.52 .03	\$8.32 8.15
5.	\$7.84 3.91	\$5.52 5.01	\$6.74 3.16	\$8.03 3.62	\$8.55 1.62
6.	\$6.59 1.84	\$4.80 .09	\$5.00 2.70	\$9.43 7.19	\$8.02 1.00

7. From \$8.95 take \$2.47.
8. Take \$1.71 from \$6.45.
9. Subtract \$4.40 from \$8.00.
10. Which will buy more, \$2.00 or \$.20?
11. How much less is 73 than 91?
12. Find the difference between \$4.25 and \$8.17.

PROBLEM TEST A1

1. Alice wants to make 60 Christmas cards. She has already made 42 cards. How many more cards does she need to make?
2. Joe counted the books in our room. There are 84 readers, 65 arithmetics, and 97 other books. How many books are there in all?
3. Father drove his car 116 miles this morning and 178 miles this afternoon. How many miles did he drive to-day?
4. Ted has 125 post cards. Joe has 82 post cards. How many more post cards has Ted than Joe?
5. Jane picked 18 flowers in her garden and Ann picked 13 flowers. How many less flowers did Ann pick than Jane?
6. Betty had 25¢. Her father gave her 35¢. How many cents had Betty all together?
7. Bob sells papers after school every day. He had 75 papers to sell yesterday. If he sold 68 papers, how many papers did he have left?
8. Ed found 62 nuts in the woods and Billy found 76 nuts. How many nuts did both boys find?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

Write down the number of problems you got right on this test. Try to do better on your next problem test.

DIAGNOSTIC TEST

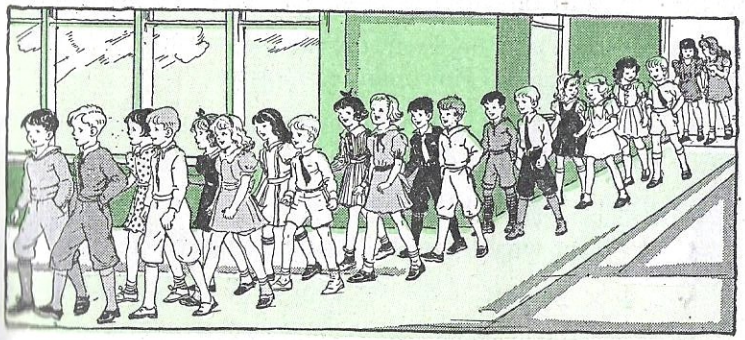
If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Subtract; then check the work:

							HELP PAGES
1.	76 − 12	89 − 78	78 − 42	56 − 45	79 − 39	88 − 16	86–88
2.	53 − 35	42 − 29	70 − 38	91 − 36	44 − 16	86 − 68	93
3.	66 − 61	47 − 45	87 − 82	135 − 62	185 − 91	129 − 73	88
4.	140 − 43	163 − 87	114 − 58	137 − 88	141 − 95		96
5.	892 − 213	752 − 525	875 − 636	783 − 445	854 − 219		98–100
6.	529 − 249	625 − 231	921 − 380	807 − 376	711 − 271		101, 103
7.	712 − 107	915 − 408	805 − 155	507 − 93	692 − 487		104
8.	\$2.86 − 1.45	\$3.92 − 1.49	\$5.65 − 4.92	\$8.00 − 7.30			108

CHAPTER IV

MULTIPLYING AND DIVIDING BY 2



FIRE DRILL

1. When the fire bell rings, the children in Mary's room march by 2's out of the school.

2. Count the children in the picture by 2's. How many children are marching out of the room?

3. The children in Jack's room also march out by 2's. The children make 15 rows all together with 2 children in each row. Count these children by 2's. How many are there in Jack's room?

4. Count by 2's to 50. Count by 2's to 100.

MULTIPLYING 2's

1. Fred is selling pencils at 2¢ each. How much will Fred charge for 2 pencils? How many are two 2's? How many are 2 times 2?

$$\begin{array}{r} 2 \\ 2 \\ \hline 4 \end{array}$$

2. How much will Fred charge for 3 pencils? He adds three 2's and finds that 3 pencils will cost 6¢.

$$\begin{array}{r} 2 \\ 2 \\ 2 \\ \hline 6 \end{array}$$

To save time later on, Fred tries always to remember that three 2's are 6. How many are 3 times 2?

3. How much will Fred charge for 4 pencils? Fred adds four 2's to find out. How many are four 2's? How many are 4 times 2?

4. A short way to write "four 2's are 8" is like this:

$4 \times 2 = 8$ The sign $\times$ means *times*.

You read this "4 *times* 2 *are* 8."

5. Add these columns to tell how much Fred charges for 5 pencils; for 6 pencils. How many are five 2's? How many are 5×2? How many are six 2's? How many are 6×2? 7×2? How many are 8×2? How many are 9×2?

$$\begin{array}{rr} 2 & 2 \\ 2 & 2 \\ 2 & 2 \\ 2 & 2 \\ \underline{2} & \underline{2} \end{array}$$

6. *What numbers should be put where the dots are?*

$5 \times 2 = \ldots$	$6 \times 2 = \ldots$	four 2's are ...
$8 \times 2 = \ldots$	$9 \times 2 = \ldots$	two 2's are ...
$3 \times 2 = \ldots$	$1 \times 2 = \ldots$	five 2's are ...
$7 \times 2 = \ldots$	$4 \times 2 = \ldots$	nine 2's are ...

9 MULTIPLICATION FACTS

1. Another way to write $5 \times 2 = 10$ is shown at the right. You read this "5 times 2 are 10." When you say that "5 times 2 are 10," you are *multiplying* 2 by 5. 10 is called the **product** of 5 and 2.

$$\begin{array}{r} 2 \\ 5 \\ \hline 10 \end{array}$$

2. Read these multiplication facts and try to remember them. The first one is "1 times 2 is 2."

$$\begin{array}{rrrrrrrrr} 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ \hline 2 & 4 & 6 & 8 & 10 & 12 & 14 & 16 & 18 \end{array}$$

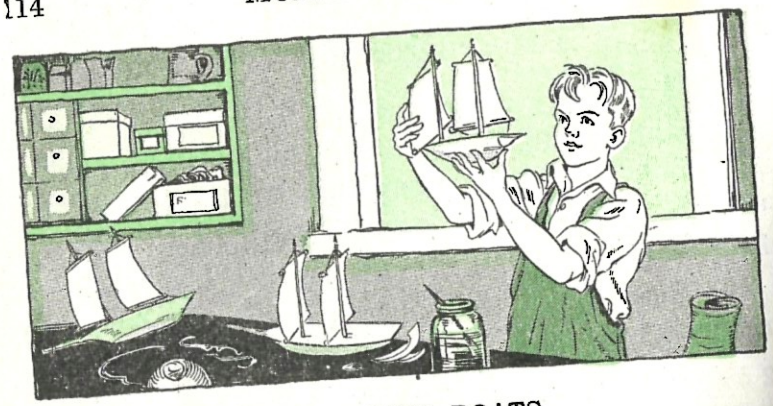
3. At the store Grace can buy little dolls at 2¢ each. How much must she pay for 3 dolls? for 6 dolls? for 8 dolls? for 9 dolls?

4. *Multiply these numbers as fast as you can:*

$$\begin{array}{rrrrrrrrr} 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 \\ \underline{3} & \underline{9} & \underline{2} & \underline{5} & \underline{8} & \underline{1} & \underline{4} & \underline{6} & \underline{7} \end{array}$$

5. Sometimes the multiplication facts are written in a table like the one below. Read all the facts in the table. If you forget the answer to a fact, like 7×2, a quick way to find it is to look in the table.

$1 \times 2 = 2$	$4 \times 2 = 8$	$7 \times 2 = 14$
$2 \times 2 = 4$	$5 \times 2 = 10$	$8 \times 2 = 16$
$3 \times 2 = 6$	$6 \times 2 = 12$	$9 \times 2 = 18$



JOE MAKES BOATS

1. Joe is making toy boats to give to his friends. He puts 2 sails on each boat. How many sails does he need for 4 boats? How many are 4×2 sails? How many are 4×2?

2. How many sails does Joe need for 6 boats? for 8 boats? for 9 boats?

3. It takes Joe 2 days to make a boat. How many days does it take him to make 5 boats? How many are 5×2? How many days would it take Joe to make 7 boats? How many are 7×2?

4. Joe's big brother, Tom, made 3 large toy boats. Tom sold these boats at \$2 each. How many dollars in all did Tom get for his 3 boats?

Multiply these numbers:

5.

2	2	2	2	2	2	2	2
3	5	2	8	4	6	1	9

9 NEW MULTIPLICATION FACTS

1. How many are 3 and 3? Another way to say that 3 and 3 are 6 is "two 3's are 6," or "2 times 3 are 6." How many are 4 and 4? How many are two 4's? How many are 2×4? You write $2 \times 4 = 8$ as shown at the right.

4
2
8

2. How many are two 5's? How many are 2×5? How many are 2×6? 2×7? 2×8?

3. When you say that 2×8 equals 16, you are *multiplying* 8 by 2. The product is 16.

4. Remember these multiplication facts:

1	2	3	4	5	6	7	8	9
2	2	2	2	2	2	2	2	2
2	4	6	8	10	12	14	16	18

5. Find the cost of 2 balloons at 8¢ each.

6. *Multiply these numbers as fast as you can:*

7	3	8	6	1	4	2	9	5
2	2	2	2	2	2	2	2	2

7. You can write the facts in ex. 4 in a table thus:

$2 \times 1 = 2$	$2 \times 4 = 8$	$2 \times 7 = 14$
$2 \times 2 = 4$	$2 \times 5 = 10$	$2 \times 8 = 16$
$2 \times 3 = 6$	$2 \times 6 = 12$	$2 \times 9 = 18$

Look in the table and find the answers for these facts: 2×7; 2×4; 2×8; 2×3.

HELPING YOU TO REMEMBER

1. How many are 2×5? How many are 5×2? You see that 2×5 and 5×2 both equal 10.

$$\begin{array}{r} 5 \\ \times\ 2 \\ \hline 10 \end{array} \qquad \begin{array}{r} 2 \\ \times\ 5 \\ \hline 10 \end{array}$$

2×5 has the same answer as 5×2.

2. How many are 2×6? How many are 6×2?

2×6 is the same as 6×2.

3. Since 2×6 is the same as 6×2, you say that 2×6 and 6×2 make a *pair* of multiplication facts.

4. If the numbers in 2×6 are **turned around** or **reversed**, you get 6×2. *Reverse* means to *turn around*. 2×6 is called the **reverse** of 6×2.

5. Is 2×4 the reverse of 4×2? Does 2×4 have the same answer as 4×2?

Reverses have the same answer.

6. If you forget the answer to 9×2, think of its *reverse*, 2×9, and try to give the answer to that. If you know that $2 \times 9 = 18$, then what is 9×2?

7. $2 \times 7 = 14$; then how many are 7×2?

8. *What numbers should be put where the dots are?*

$5 \times 2 = 2 \times \ldots$ $\quad 3 \times 2 = 2 \times \ldots$ $\quad 2 \times 6 = 6 \times \ldots$

$8 \times 2 = 2 \times \ldots$ $\quad 2 \times 1 = 1 \times \ldots$ $\quad 9 \times 2 = 2 \times \ldots$

If you forget the answer to any multiplication fact, think of its reverse and try to give the answer to that.

USING 2's IN MULTIPLICATION

1. Find the cost of the following:

2 pears at 4¢ each.
2 balls at 2¢ each.
2 rulers at 9¢ each.
2 dolls at 8¢ each.
2 bananas at 3¢ each.
2 pencils at 5¢ each.

2. Betty is writing 7 letters to her friends, asking them to come to her birthday party. She needs a 2-cent stamp for each letter. The stamps will cost 7×2¢. How many cents is that?

3. In ex. 2 how much would Betty pay for 2-cent stamps for 4 letters? for 6 letters? for 9 letters?

4. Count by 2's to 60. Count by 2's to 100.

Multiply these numbers:

5.	2	2	7	2	2	8	6	9	2
	4	1	2	5	2	2	2	2	3
6.	2	2	2	3	1	4	2	5	2
	2	7	8	2	2	2	6	2	9

7. Jane wrote some facts in a table but she wrote them in the wrong order. Here is Jane's table:

$2 \times 1 = \ldots$ $\quad 2 \times 3 = \ldots$ $\quad 2 \times 9 = \ldots$

$2 \times 2 = \ldots$ $\quad 2 \times 4 = \ldots$ $\quad 2 \times 8 = \ldots$

$2 \times 5 = \ldots$ $\quad 2 \times 6 = \ldots$ $\quad 2 \times 7 = \ldots$

Write a table showing how Jane should have made it. Give the answer to each fact in her table.

JACK BUYS SOME KNIVES

1. Jack bought 2 knives at 43¢ each. How much did he pay for both?

You could find the cost of the knives by adding two 43's, as shown at the right:

$$\begin{array}{r} 43 \\ 43 \\ \hline 86 \end{array}$$

A shorter way to do it is to multiply 43 by 2, as shown below:

Think "2 × 3 = 6." Write 6 under 2.
Think "2 × 4 = 8." Write 8 under 4.

$$\begin{array}{rl} 43 & \text{Multiplicand} \\ 2 & \text{Multiplier} \\ \hline 86 & \text{Product} \end{array}$$

You see that the knives cost 86¢.

To check, go over the work again and see if you get the same answer. If you do, you may call the work right.

In the work above, 43 is called the **multiplicand**, 2 is called the **multiplier**, and 86, the **product**.

Multiply. Check the work by going over it again:

2. $\begin{array}{r} 32 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 24 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 33 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 21 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 42 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 234 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 422 \\ 2 \\ \hline \end{array}$

MULTIPLYING TWO-FIGURE NUMBERS

1. George bought 2 toy boats. They cost 21¢ each. How much did he pay for both boats?

2. Jane had 2 candy boxes. She put 24 pieces of candy in each box. How many pieces did she put in both boxes?

3. Grace had 2 large candy boxes. She put 64 pieces of candy in each box. How many pieces did Grace put in both her boxes?

Multiply 64 by 2 like this:

Think "2 × 4 = 8." Write 8 under 2.
Think "2 × 6 = 12." Write 12 next to 8.
How many pieces did Grace put in both boxes?

$$\begin{array}{r} 64 \\ 2 \\ \hline 128 \end{array}$$

Multiply. Check the work by going over it again:

4. $\begin{array}{r} 34 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 22 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 83 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 51 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 63 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 341 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 243 \\ 2 \\ \hline \end{array}$

5. $\begin{array}{r} 73 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 82 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 41 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 84 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 92 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 123 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 431 \\ 2 \\ \hline \end{array}$

6. $\begin{array}{r} 42 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 53 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 93 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 81 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 432 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 144 \\ 2 \\ \hline \end{array}$

7. $\begin{array}{r} 74 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 61 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 52 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 94 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 141 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 321 \\ 2 \\ \hline \end{array}$

CHANGING CENTS TO DOLLARS AND CENTS

1. Dick sold 2 rabbits to Joe at 72¢ each. How much did Joe pay for both rabbits?

$$\begin{array}{r} 72¢ \\ 2 \\ \hline 144¢ \end{array}$$

The answer to this problem is 144¢. You know that 100¢ make 1 dollar, so 144¢ is the same as 1 dollar and 44 cents, or $1.44.

When an answer is larger than 100¢, change the answer to dollars and cents.

2. Mary's mother bought 2 dresses for Mary's little sister. Each dress cost 93¢. How much did both dresses cost? After you find the answer, write it in dollars and cents.

3. It costs 52¢ to go by bus to Uncle Ed's house. How much will it cost if both Joe and Ann go?

4. Tickets to the moving pictures at Peggy's school cost 21¢ each. How much will 2 tickets cost? In this problem do you change the answer to dollars and cents? Tell why or why not.

Multiply the following. Change each answer to dollars and cents if it is more than 100¢:

5. 54¢ × 2	**6.** 61¢ × 2	**7.** 44¢ × 2	**8.** 83¢ × 2	**9.** 74¢ × 2
10. 63¢ × 2	**11.** 34¢ × 2	**12.** 71¢ × 2	**13.** 22¢ × 2	**14.** 94¢ × 2
15. 84¢ × 2	**16.** 92¢ × 2	**17.** 43¢ × 2	**18.** 64¢ × 2	**19.** 73¢ × 2

HOW TO CARRY IN MULTIPLICATION

Alice bought 2 flags at 39¢ each. How much did she pay for both of them?

A short way to find out is to multiply 39 by 2.

Think "2 × 9 = 18." Write 8 and remember the 1, which you will carry in the next step.

Then think "2 × 3 = 6." Add 6 and the 1 that you are carrying, which makes 7. Write 7.

Alice paid 78¢ for both flags.

Check the work by going over it again.

$$\begin{array}{r} 39 \\ 2 \\ \hline 78 \end{array}$$

Practice in Multiplying

Multiply. Check the work by going over it again:

1. 27 × 2	**7.** 46 × 2	**13.** 59 × 2	**19.** 87 × 2	**25.** 135 × 2	**31.** 237 × 2
2. 79 × 2	**8.** 65 × 2	**14.** 29 × 2	**20.** 56 × 2	**26.** 439 × 2	**32.** 226 × 2
3. 68 × 2	**9.** 49 × 2	**15.** 85 × 2	**21.** 37 × 2	**27.** 419 × 2	**33.** 238 × 2
4. 25 × 2	**10.** 77 × 2	**16.** 89 × 2	**22.** 95 × 2	**28.** 415 × 2	**34.** 346 × 2
5. 18 × 2	**11.** 47 × 2	**17.** 26 × 2	**23.** 96 × 2	**29.** 416 × 2	**35.** 128 × 2
6. 38 × 2	**12.** 17 × 2	**18.** 57 × 2	**24.** 78 × 2	**30.** 319 × 2	**36.** 147 × 2

THE SCOUTS MAKE A TRIP

1. Two Boy Scouts bought these things for a trip up Blue Hill:

2 packs at 47¢ each
2 knives at 50¢ each
2 hats at 65¢ each
2 cups at 15¢ each
2 belts at 38¢ each
2 ropes at 26¢ each

How many things did they buy all together?

2. How much did the boys pay for the packs?

3. How many dollars did they pay for the knives?

4. How much did they pay for the hats?

5. How many cents did the boys pay for the cups? for the belts? for the ropes?

6. If you add together the answers to problems 2, 3, 4, and 5, you will find how much the boys paid for all the things they bought. Try to do it.

7. How much more did the boys pay for each hat than they paid for each pack?

PROBLEM TEST A2

1. Jim had 83 marbles. He gave 35 marbles to Bob. How many marbles did he have left?

2. Last year there were 218 pupils in our school. This year there are 197 pupils. How many less pupils are there this year than last year?

3. Ted had 86 stamps. Then he bought 24 and his aunt gave him 55. How many has Ted now?

4. Yesterday Billy got 93 eggs from his hens and to-day he got 79 eggs. How many more eggs did he get yesterday than to-day?

5. Fred sold 86 papers to-day and John sold 74 papers. How many papers did both boys sell?

6. At our school party there were 43 boys and 39 girls. How many children went to the party?

7. We are going to make 144 paper flowers for the school fair. We have made only 76 flowers. How many more flowers must we make?

8. The pupils in three grades had a picnic. There were 40 pupils from the third grade, 38 pupils from the fourth grade, and 33 pupils from the fifth grade. How many pupils were there all together?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

This test is like Test A1 on page 109. Unless you had all the problems right on Test A1, you should do better this time. Keep your mark on this test.

17 MULTIPLICATION FACTS WITH 1's

1. How many are 2×1? How many are 1×2? Does 2×1 have the same answer as 1×2?

2. How many are 4×1? How many are 1×4? Does 4×1 have the same answer as 1×4?

3. You know that 5×1 is called the reverse of 1×5. Reverses always have the same answer. Since $5 \times 1 = 5$, then $1 \times 5 = 5$.

$$\begin{array}{r} 1 \\ \times\ 5 \\ \hline 5 \end{array} \qquad \begin{array}{r} 5 \\ \times\ 1 \\ \hline 5 \end{array}$$

4. How many are 6×1? How many are 1×6?

5. How many are 8×1? How many are 1×8?

6. Here are the multiplication facts that have 1's. Learn them. It is easy to remember them.

$$\begin{array}{r} 1 \\ \times\ 2 \\ \hline 2 \end{array} \quad \begin{array}{r} 2 \\ \times\ 1 \\ \hline 2 \end{array} \quad \begin{array}{r} 1 \\ \times\ 3 \\ \hline 3 \end{array} \quad \begin{array}{r} 3 \\ \times\ 1 \\ \hline 3 \end{array} \quad \begin{array}{r} 1 \\ \times\ 4 \\ \hline 4 \end{array} \quad \begin{array}{r} 4 \\ \times\ 1 \\ \hline 4 \end{array} \quad \begin{array}{r} 1 \\ \times\ 5 \\ \hline 5 \end{array} \quad \begin{array}{r} 5 \\ \times\ 1 \\ \hline 5 \end{array} \quad \begin{array}{r} 1 \\ \times\ 1 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 1 \\ \times\ 6 \\ \hline 6 \end{array} \quad \begin{array}{r} 6 \\ \times\ 1 \\ \hline 6 \end{array} \quad \begin{array}{r} 1 \\ \times\ 7 \\ \hline 7 \end{array} \quad \begin{array}{r} 7 \\ \times\ 1 \\ \hline 7 \end{array} \quad \begin{array}{r} 1 \\ \times\ 8 \\ \hline 8 \end{array} \quad \begin{array}{r} 8 \\ \times\ 1 \\ \hline 8 \end{array} \quad \begin{array}{r} 1 \\ \times\ 9 \\ \hline 9 \end{array} \quad \begin{array}{r} 9 \\ \times\ 1 \\ \hline 9 \end{array}$$

7. In ex. 6 which pairs of facts are reverses? Is there any fact that does not have a reverse? If so, what fact is it?

If you multiply any number by 1, the answer is the same as the number itself.

If you multiply 1 by any number, the answer is the same as the number itself.

USING 1's IN MULTIPLICATION

1. Mary Ann keeps chickens. This week she got 7 dozen eggs. 12 eggs make 1 dozen. How many eggs are there in 7 dozen?

You must multiply 12 by 7.

Think "$7 \times 2 = 14$." Write 4 and remember the 1 which must be carried. Then think "$7 \times 1 = 7$." Add 7 and the 1 (carried) which makes 8. Write 8. There are 84 eggs in 7 dozen eggs.

$$\begin{array}{r} 12 \\ \times\ 7 \\ \hline 84 \end{array}$$

Multiply. Check the work by going over it again:

2.	21 × 7	12 × 4	22 × 5	11 × 7	22 × 9	112 × 6	111 × 9
3.	78 × 1	21 × 8	12 × 9	21 × 5	12 × 5	167 × 1	121 × 5
4.	11 × 9	22 × 6	45 × 1	21 × 4	12 × 7	112 × 7	354 × 1
5.	22 × 4	21 × 6	12 × 8	69 × 1	22 × 3	112 × 8	121 × 3
6.	12 × 3	63 × 1	22 × 7	21 × 9	11 × 8	786 × 1	112 × 4
7.	89 × 1	11 × 5	12 × 6	22 × 8	21 × 3	112 × 5	212 × 3

GETTING READY FOR CHRISTMAS

1. Jane, Alice, and Betty have been making paper Christmas trees. Alice has made 9 trees of silver paper, Jane has made 5 trees of gold paper, and Betty has made 7 trees of white paper. How many trees have the girls made in all? 21

2. Jack wants to make 22 Christmas cards to send to his friends. He has made 7 of them. How many more cards does he need to make? 15

3. Some of the boys and girls have made stars to put on the school Christmas tree. They have made 18 red stars, 25 silver stars, and 16 gold stars. How many stars have they made in all? 53

4. Tom painted a Santa Claus on each of 21 cards. He gave 14 of these cards to his friends. How many cards did he have left? 7

5. The girls have made 15 paper dolls. They are making 2 dresses for each doll. How many dresses will they have when all are made? 30

ADDITION AND SUBTRACTION

Add and check the work:

1.	8	7	3	9	8	6	5	2
	2	6	1	7	7	3	0	5
	6	6	8	8	5	5	8	6
	3	8	9	6	1	8	7	7
2.	346	235	309	429	236	173		
	529	484	407	419	432	435		
3.	202	348	152	270	139	515		
	126	119	318	259	416	315		

Subtract and check the work:

4.	676	943	539	700	703	364
	412	214	378	130	273	227
5.	563	807	448	380	857	708
	148	194	435	28	386	458
6.	822	125	155	949	566	985
	551	9	146	297	360	467
7.	733	624	786	509	394	276
	360	121	208	166	145	69
8.	554	453	132	405	189	640
	372	426	8	265	84	235

19 MULTIPLICATION FACTS WITH ZEROS

1. If you work an example and get it wrong, your mark on that example is 0. If you work another example and that one is wrong too, you get another 0. Your mark on both examples is $0 + 0$, which equals 0. This shows that two 0's make 0. Another way to say this is: $2 \times 0 = 0$.

$$\begin{array}{r} 0 \\ 2 \\ \hline 0 \end{array}$$

2. If you work 3 examples and get them all wrong, your mark is 0. Hence $3 \times 0 = 0$.

3. How much is 7×0? 9×0? 1×0? 0×0?

Any number $\times$ 0 = 0.

4. You know that $5 \times 0 = 0$. Its reverse, which is 0×5, must have the same answer. This shows that $0 \times 5 = 0$.

$$\begin{array}{r} 0 \\ 5 \\ \hline 0 \end{array} \qquad \begin{array}{r} 5 \\ 0 \\ \hline 0 \end{array}$$

5. Does $4 \times 0 = 0 \times 4$? Does $8 \times 0 = 0 \times 8$?

0 $\times$ any number = 0.

6. Here are the multiplication facts that have zeros. Learn them. It is easy to remember them.

$$\begin{array}{r} 0 \\ 1 \\ \hline 0 \end{array} \quad \begin{array}{r} 1 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 2 \\ \hline 0 \end{array} \quad \begin{array}{r} 2 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 3 \\ \hline 0 \end{array} \quad \begin{array}{r} 3 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 4 \\ \hline 0 \end{array} \quad \begin{array}{r} 4 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 5 \\ \hline 0 \end{array} \quad \begin{array}{r} 5 \\ 0 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 0 \\ 6 \\ \hline 0 \end{array} \quad \begin{array}{r} 6 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 7 \\ \hline 0 \end{array} \quad \begin{array}{r} 7 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 8 \\ \hline 0 \end{array} \quad \begin{array}{r} 8 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 9 \\ \hline 0 \end{array} \quad \begin{array}{r} 9 \\ 0 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ 0 \\ \hline 0 \end{array}$$

USING ZEROS IN MULTIPLICATION

1. George and his father drove 109 miles to see Aunt Mary. They drove back the next day. How many miles did they drive in all?

Multiply 109 by 2 in this way:

Think "$2 \times 9 = 18$." Write 8 and remember the 1 to be carried.
Think "$2 \times 0 = 0$. $0 + 1$ (carried) $= 1$." Write 1.
Think "$2 \times 1 = 2$." Write 2. The answer is 218.
They drove 218 miles all together.

$$\begin{array}{r} 109 \\ 2 \\ \hline 218 \end{array}$$

Multiply. Check the work by going over it again:

2.	90 × 2	20 × 8	10 × 7	38 × 2	110 × 9	404 × 2	102 × 6
3.	10 × 8	21 × 6	52 × 1	17 × 2	212 × 4	406 × 2	208 × 2
4.	30 × 2	20 × 9	34 × 2	40 × 1	200 × 4	101 × 5	300 × 2
5.	12 × 9	61 × 2	10 × 6	97 × 2	100 × 5	405 × 2	102 × 8
6.	40 × 2	35 × 2	30 × 1	12 × 6	140 × 2	102 × 9	120 × 3
7.	10 × 9	20 × 1	20 × 3	72 × 1	102 × 5	409 × 2	307 × 2

MULTIPLICATION FACTS

Here are all the multiplication facts you have studied. Say the answers to all of them as fast as you can:

1.	2 2	3 1	9 2	1 0	8 1	1 2	0 2	6 1	2 5
2.	7 1	6 2	4 0	2 3	4 1	0 0	0 5	1 6	9 0
3.	2 0	2 7	1 1	0 7	1 5	7 2	0 8	4 2	6 0
4.	3 2	1 4	0 1	1 9	2 1	9 2	0 4	8 2	0 9
5.	2 6	5 0	0 3	2 8	1 3	7 0	9 1	5 2	1 7
6.	5 1	2 4	0 6	1 8	7 2	2 8	3 0	2 9	8 0

Remember these:

Any number × 0 = 0

0 × any number = 0

Any number × 1 = the number itself

1 × any number = the number itself

LEARNING TO DIVIDE BY 2

1. Peggy Ann had 8 oranges. She divided them into 2's as shown below:

How many 2's make 8?

2. Put 10 pennies on the table and divide them into 2's. How many 2's are there in 10?

3. Tom says that there are five 2's in 10 because $5 \times 2 = 10$. Is he right?

4. Put 12 books on the table. Then divide them into 2's. How many 2's are there in 12?

5. Alice says that there are six 2's in 12 because $6 \times 2 = 12$. Is Alice right?

6. Another way to say that 12 divided into 2's gives six 2's is "12 divided by 2 is 6." A short way to write it is like this: $12 \div 2 = 6$. The sign ÷ means *divided by*.

7. When you find how many 2's there are in 12, you are *dividing*.

8. Read these and give the answers. Divide things into 2's to find the answers if you need to:

$4 \div 2 =$	$8 \div 2 =$	$14 \div 2 =$
$6 \div 2 =$	$12 \div 2 =$	$18 \div 2 =$
$2 \div 2 =$	$10 \div 2 =$	$16 \div 2 =$

MULTIPLICATION HELPS DIVISION

1. You can write $8 \div 2 = 4$ in another way as shown at the right. $\frac{4}{2)8}$

2. $2)\overline{6}$ means $6 \div 2$. What does $2)\overline{10}$ mean? What does $2)\overline{12}$ mean? What does $2)\overline{14}$ mean?

3. Since $7 \times 2 = 14$, you see that seven 2's make 14. Then $14 \div 2$ is 7. $2)\overline{14}$ is also 7.

4. Since $9 \times 2 = 18$, how many 2's make 18? What does $18 \div 2$ equal? What does $2)\overline{18}$ equal?

5. Since $5 \times 2 = 10$, how many 2's make 10? What does $10 \div 2$ equal? What does $2)\overline{10}$ equal?

6. Fred wants to know how many 2's there are in 16. So he thinks "What number times 2 makes 16?" He says, "$8 \times 2 = 16$, so there must be eight 2's in 16." What does $2)\overline{16}$ equal?

7. To find how many 2's there are in 12, think "What number times 2 makes 12?" Since $6 \times 2 = 12$, how many 2's make 12? What does $2)\overline{12}$ equal?

Tell what numbers should be put where the dots are:

8. $4 \times 2 = 8$, so there are . . . 2's in 8.

9. $3 \times 2 = 6$, so there are . . . 2's in 6.

10. $7 \times 2 = 14$, so there are . . . 2's in 14.

To find how many 2's there are in a number like 18, think "What number times 2 equals 18?"

9 DIVISION FACTS

1. Try to remember these 9 division facts. The first fact is read "2 divided by 2 is 1."

$\frac{1}{2)2}$ $\frac{2}{2)4}$ $\frac{3}{2)6}$ $\frac{4}{2)8}$ $\frac{5}{2)10}$

$\frac{6}{2)12}$ $\frac{7}{2)14}$ $\frac{8}{2)16}$ $\frac{9}{2)18}$

2. Some children went to Mary's house to play. Mary had 12 apples. If she gave 2 apples to each child, how many children got apples? How many 2's are there in 12? How many are $12 \div 2$?

3. *Divide. Give the answers as quickly as you can:*

$2)\overline{12}$ $2)\overline{8}$ $2)\overline{10}$ $2)\overline{4}$ $2)\overline{18}$ $2)\overline{16}$ $2)\overline{6}$ $2)\overline{14}$

4. The division facts may be written in a table like this. Read all the facts in this table:

$2 \div 2 = 1$	$8 \div 2 = 4$	$14 \div 2 = 7$
$4 \div 2 = 2$	$10 \div 2 = 5$	$16 \div 2 = 8$
$6 \div 2 = 3$	$12 \div 2 = 6$	$18 \div 2 = 9$

If you forget the answer to a fact, like $16 \div 2$, you can find it quickly by looking in the table.

5. Find the answers to these facts in the table:

$12 \div 2 =$ $18 \div 2 =$ $6 \div 2 =$ $14 \div 2 =$

$16 \div 2 =$ $10 \div 2 =$ $4 \div 2 =$ $8 \div 2 =$

DICK'S STORY BOOKS

1. Dick has a new story book. He reads 2 stories each day. How many days will it take him to read 8 stories? How many 2's are there in 8?

2. If Dick reads 2 stories each day, how many days will it take him to read 10 stories? to read 12 stories? 16 stories?

3. Dick has another story book with 14 stories in it. How many days will it take him to read this book if he reads 2 stories each day?

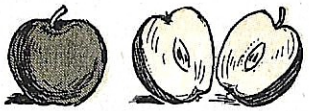
4. This morning Dick read 2 stories. There were 12 pages in each story. How many pages all together did Dick read to-day?

5. Dick likes to read animal stories. There are 7 animal stories in one of his books and 6 animal stories in the other. How many animal stories in all are there in both books?

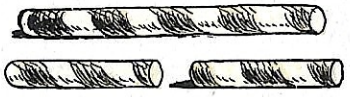
6. Dick's 2 story books cost 48¢ each. How much did both books cost?

LEARNING ABOUT $\frac{1}{2}$

1. Mary has an apple. She cuts the apple into 2 equal pieces. Each piece is *one half* of the apple. One half is written $\frac{1}{2}$.

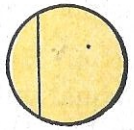


2. Here we have a stick of candy. Below it is the stick of candy divided into halves. Are both halves the same size?

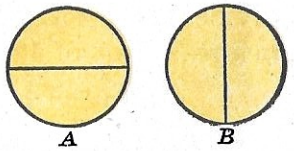


3. Peggy bought a half pound of butter this morning and another half pound this afternoon. How much butter did she buy to-day?

4. The teacher asked Ann to draw a line to divide this circle into halves. This is the way Ann did it. Did she do it right?



5. Alice divided a circle into halves as shown at *A*. John divided it as shown at *B*. Did both Alice and John do it right?



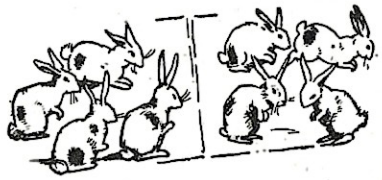
6. The teacher will draw circles on the board. Divide each circle into halves.

Both halves of anything must be the same size.

7. Show how to divide a sheet of paper into halves by folding it. Show how to divide a piece of string into halves by folding it.

FINDING ONE HALF OF A NUMBER OF THINGS

1. Helen has 8 bunnies. She divides them into 2 equal groups. How many bunnies are there in each group?



2. When Helen divides her 8 bunnies into 2 equal groups, each group contains *one half*, or $\frac{1}{2}$, of 8 bunnies. You see that $\frac{1}{2}$ of 8 bunnies is 4 bunnies.

3. Another way of writing "$\frac{1}{2}$ of 8" is "$8 \div 2$." Here $8 \div 2$ means that 8 has been divided into 2 equal parts. What is $8 \div 2$?

4. Here are 12 cents divided into 2 equal piles. Count the cents in each pile. How many are $\frac{1}{2}$ of 12¢? Now divide 12¢ by 2. Do you get the same answer as before? Is $\frac{1}{2}$ of 12 the same as $12 \div 2$?

To find $\frac{1}{2}$ of a number, divide it by 2.

5. *Find the following:*

$\frac{1}{2}$ of 2	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 10
$\frac{1}{2}$ of 4	$\frac{1}{2}$ of 14	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 20

6. *Tell what numbers should be put in the spaces:*

$\frac{1}{2}$ of 10 is the same as $10 \div (\ \ )$

$\frac{1}{2}$ of 16 is the same as $16 \div (\ \ )$

7. Find $\frac{1}{2}$ of 20 books; of 8 birds; of 14¢; of $1[illegible]

CAN YOU DO THESE PROBLEMS?

1. John wants to buy a toy engine that costs 18¢. He says he can save 2¢ each day. How many days will it take John to save 18¢ so he can buy the engine?

2. Frank is making Christmas cards. He makes 2 cards each day. How many days will it take him to make 12 cards? to make 16 cards?

3. Bob has 10 apples. He gives half of them to Peggy. How many apples does he give to Peggy?

4. Billy has 18 rabbits. Half of them are black rabbits. How many black rabbits has Billy?

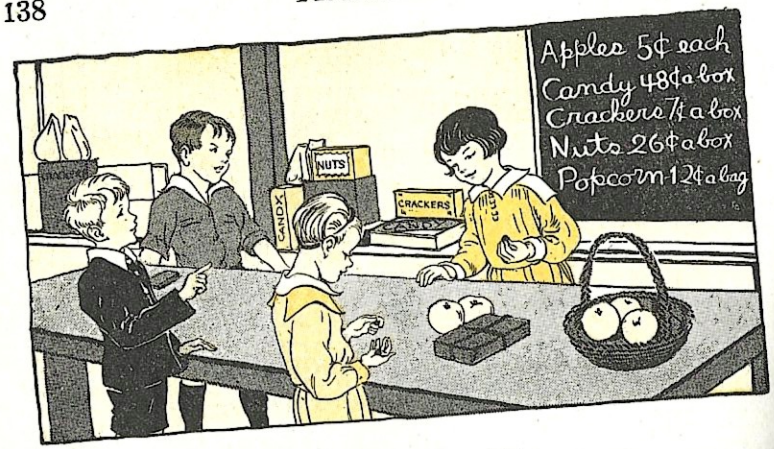
5. Frank has a sheet of gold paper. He wants to cut it into halves. Show him how to fold it to make halves; then show him how to cut it. Will both halves be the same size?

6. Mary had 6 kittens, but half of them ran away. How many kittens has she now?

7. Tom cut an apple into two pieces so that one piece was a little larger than the other. Tom said, "I will give the big half to Mary. I will keep the little half myself." Is it right to call Mary's piece the "big half"? Tell why or why not.

8. Tom wanted to cut a fish line into halves. Show how he could do it.

9. Ned had 14 examples to do. He has done half of them. How many examples has he done?



PLAYING STORE

1. Jack bought 2 boxes of nuts. He paid . . .¢.

2. Ed bought a box of crackers, a box of candy, and a bag of popcorn. He paid . . .¢.

3. Mary and Tom bought a bag of popcorn together for 12¢. Each paid ½ of the cost. How much did each one pay?

4. Alice bought a box of crackers. She had 25¢ to pay for it. How much money did she have left?

5. Joe bought a bag of popcorn for 12¢. Dick bought a box of nuts for 26¢. How much more money did Dick spend than Joe?

6. Fred bought an apple and a box of nuts. They cost . . .¢ all together.

7. Betty bought an apple and a box of candy. She spent . . .¢ in all at the store.

PRACTICE IN MULTIPLYING

Multiply. Check the work by going over it again:

1.	249 × 2	237 × 2	508 × 2	236 × 2	445 × 2	216 × 2
2.	317 × 2	419 × 2	101 × 8	439 × 2	148 × 2	339 × 2
3.	425 × 2	200 × 4	129 × 2	405 × 2	325 × 2	316 × 2
4.	126 × 2	435 × 2	227 × 2	122 × 3	447 × 2	307 × 2

MIXED PRACTICE

1. Add 6, 8, 2, 4, and 9.
2. From 700 take 290.
3. Multiply 306 by 2.
4. Divide 14 by 2.
5. Multiply 229 by 2.
6. Subtract 19 from 57.

Write in columns and add:

7. 84 + 58 + 32
8. 64 + 33 + 76
9. 95 + 54 + 64
10. 83 + 79 + 86 + 15
11. 52 + 88 + 27 + 20
12. 29 + 37 + 62 + 33

Subtract these numbers:

13. 267 − 148
14. 914 − 352
15. 348 − 225

PROBLEM TEST A3

1. Mr. Day grows apples. He sold 112 baskets of red apples and 295 baskets of yellow apples. How many baskets of both kinds did he sell?

2. Ann has to do 25 examples. She has done 14 of them. How many more has she to do?

3. Ed has 12 white rabbits and Tom has 9 white rabbits. How many less rabbits has Tom than Ed?

4. Mary Ann picked 26 flowers, Alice picked 14 flowers, and Betty picked 18 flowers. How many flowers did they pick in all?

5. Jack earned 70¢ and Joe earned 55¢. How much more did Jack earn than Joe?

6. This morning Betty's mother made 52 cookies. She gave 15 cookies to Betty and her friends. How many cookies did she have left?

7. John went to camp for 11 days in June, 31 days in July, and 14 days in August. How many days did John spend at camp all together?

8. Fred counted 108 automobiles this morning and 184 automobiles this afternoon. How many automobiles did he count to-day?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

This test is like Tests A1 and A2, pages 109 and 123. You should have all the problems right on this test.

ADDITION

Add the following and check the work:

1.	394	252	748	368	677	223
	222	284	138	413	162	373
2.	148	401	485	215	562	397
	342	493	233	457	140	381
3.	535	211	117	283	108	182
	312	690	514	560	569	704
4.	340	493	277	120	659	494
	560	463	161	745	333	352

5.	64	20	94	63	59	87	56
	56	99	96	98	36	79	88
	56	25	15	35	79	50	66
6.	90	48	79	77	37	35	48
	75	89	64	80	20	91	56
	56	50	39	48	78	69	45
	47	61	36	15	69	48	70
7.	36	53	18	23	20	86	85
	54	51	40	68	82	69	58
	20	76	48	23	92	71	71
	26	19	34	78	46	18	59

SUBTRACTION

Subtract the following and check the work:

1.	887 611	600 280	885 547	986 732	171 75	903 763
2.	858 457	803 691	995 626	916 407	149 51	138 98
3.	753 226	533 390	749 366	728 242	158 73	126 79
4.	735 471	210 103	846 531	771 103	133 88	353 250

In these subtraction examples the answers are given. Tell which answers are wrong and correct them:

5.	945 513 432	937 255 682	582 145 447	476 195 281	186 94 192	134 46 88
6.	484 293 191	785 539 246	510 305 205	495 390 105	100 54 56	700 240 560
7.	777 359 428	908 706 202	809 243 666	821 109 712	162 97 65	124 39 95

PROBLEM REVIEW

1. It takes George 12 minutes to walk from his house to the store and back. How many minutes will it take him to walk one way?

2. It took Joe 8 minutes to work 2 problems of the same kind. How many minutes did it take him to work 1 problem?

3. Billy sells Christmas cards. He makes 2¢ on each one that he sells. How much will he make if he sells 8 cards? if he sells 9 cards?

4. Billy sells his Christmas cards at 5¢ each. How much does he get for 2 Christmas cards?

5. What is the reverse of $2 \times 9 = 18$? Do reverses have the same answer?

6. Tom has forgotten the answer to 7×2. So he thinks of the reverse of 7×2. What is the reverse? Can you give the answer to the reverse? Then what does 7×2 equal?

7. What is the reverse of $4 + 7$? of $3 + 8$? of $2 + 9$? of $5 + 8$? Tell the answer to each fact.

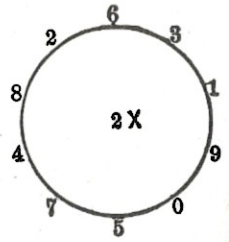
8. John can walk from his house to school in 16 minutes. How long does it take him to walk to school and back?

9. This week Frank earned 35¢. Jack earned twice as much as Frank. How much did Jack earn? How much in all did both boys earn?

REVIEW

1. How many dollars and cents do 165¢ make?

2. Here is a game called "Add the Number You Are Remembering." Think of the number 1 and remember it. Begin at any number on the circle, multiply it by 2, and then add the 1 that you are remembering. Do it like this: $2 \times 6 = 12$, $12 + 1 = 13$. Give only the answer, 13.



3. Play the game again. This time multiply each number by 2 and add 2 to the answer.

4. What is $\frac{1}{2}$ of 12? $\frac{1}{2}$ of 8? $\frac{1}{2}$ of 18?

5. What is $16 \div 2$? $10 \div 2$? $2 \div 2$?

6. What is $2\overline{)4}$? $2\overline{)14}$? $2\overline{)6}$? $2\overline{)18}$?

7. What is the reverse of 9×2? of $9 + 2$?

8. Does $8 \times 3 = 3 \times 8$? Does $8 + 3 = 3 + 8$?

9. How many are 8×1? 8×0? 1×1? 0×0?

Multiply. Check the work by going over it again:

10.	25 × 2	20 × 6	12 × 7	15 × 2	300 × 2	102 × 7	64¢ × 2
11.	49 × 2	35 × 2	22 × 8	12 × 5	112 × 6	215 × 2	12¢ × 9

DIAGNOSTIC TEST

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Multiply these numbers:

								HELP PAGES
1.	6 × 2	9 × 2	3 × 2	8 × 2	2 × 7	2 × 4	2 × 5	113–117
2.	8 × 0	1 × 7	4 × 1	0 × 6	1 × 9	5 × 0	6 × 1	124, 128

Multiply and check the work:

3.	32 × 2	24 × 2	61 × 2	54¢ × 2	73¢ × 2	118–120
4.	28 × 2	47 × 2	85 × 2	236 × 2	129 × 2	121
5.	20 × 4	12 × 8	60 × 2	211 × 5	102 × 7	125, 129

Divide these numbers:

6.	$2\overline{)8}$	$2\overline{)14}$	$2\overline{)12}$	$2\overline{)16}$	$2\overline{)6}$	132, 133

Give the answers to the following:

7.	$\frac{1}{2}$ of 4 = ?	$\frac{1}{2}$ of 14 = ?	$\frac{1}{2}$ of 16 = ?	135
8.	$18 \div 2 = ?$	$2 \div 2 = ?$	$10 \div 2 = ?$	131, 133

PLAYING HOPSCOTCH

CHAPTER V

MORE ADDITION AND SUBTRACTION

NUMBERS TO TEN THOUSAND

1. Dates, telephone numbers, and house numbers are often written with four figures. Thus, we may write December 25, 1937 or 1734 Baker Street.

2. Count by 10's to 100. Count by 100's to 1000. How many 100's make 1000?

3. Numbers that stand for thousands are read thus:

2000 is read *2 thousand.*

1300 is read *13 hundred* or *1 thousand 3 hundred.*

1276 is read *1 thousand 2 hundred 76* or *12 hundred 76.*

1003 is read *1 thousand 3* or *10 hundred 3.*

4. A comma is put after the thousands in a 5-figure number like 10,000. This makes the number easier to read. In a 4-figure number like 2672, the comma is often left out.

5. Read these numbers: 6000; 1700; 1425; 1776; 1928; 5008; 1208; 1610; 3330; 2001.

6. Count by 1000's to 10,000, like this: 1000, 2000, 3000, and so on.

READING AND WRITING NUMBERS

Read these sentences:

1. Ann Green lives at 3597 Hill Street.
2. Joe's brother has 1478 stamps.
3. There were 7592 people at the baseball game.

Read these numbers:

4. 9000	1200	1986	3347	5624
5. 3009	9704	4557	4700	8001
6. 7007	6607	9437	2500	2908

Write the following numbers in figures:

7. Four thousand
8. Fourteen hundred
9. One thousand five
10. Seven thousand fifteen
11. Eight thousand eighteen
12. Twelve hundred forty-seven
13. Three thousand five hundred sixty-two

14. The telephone number of Billy's aunt is Hillside 7608. When Billy calls her, he gives the number like this, "Hillside seven, six, o, eight." When there is a zero in a telephone number, say it like the letter o.

15. Tell how you would call these telephone numbers: Lake 1928, Spring 9084, Orange 340.

16. The year 1938 is read *nineteen thirty-eight*. Read these years: 1776, 1492, 1914, 1930, 1888.

ANOTHER WAY TO WRITE NUMBERS

1. Some clocks and watches have the numbers written with letters which we call *Roman numerals*. Roman numerals are used also in numbering chapters of books and in writing dates on buildings.

2. Here are the first ten Roman numerals and the numbers they stand for:

I	II	III	IIII or IV	V	VI	VII	VIII	IX	X
1	2	3	4	5	6	7	8	9	10

3. If you write X before any of these numbers, you add 10 to that number.

Thus, writing X before III gives XIII, which is 10 + 3, or 13. Writing X before IX gives XIX, which is 10 + 9, or 19. Likewise, XV = 15 and XX = 20.

4. Read these numbers: XI, XVIII, XIV, XVII.

5. Write in Roman numerals the numbers of the next two chapters after Chapter XIV in Ann's book.

6. The last chapter in Frank's book is Chapter XIX. How many chapters does the book contain?

7. Write in Roman numerals: 11, 14, 16, 17, 18.

8. By writing XX before any one of the first ten numbers, you add 20 to that number.

Thus, if you put XX before V you get XXV, which is 20 + 5, or 25. Likewise, XXIV = 20 + 4, or 24.

9. Read: XXII, XXVI, XXVII, XXX.

10. Write in Roman numerals: 21, 23, 26, 29, 30.

REVIEW

1. Turn to page 32 and try to give the answers to the 100 addition facts in 3 minutes.

Add these numbers and check the work:

2.	63 76	28 41	72 12	59 60	93 81	43 35	84 44
3.	17 34	59 39	26 68	55 27	69 24	36 36	49 47
4.	65 39	89 38	67 83	68 57	52 79	48 83	72 88
5.	49 55	94 27	53 47	99 16	78 55	74 68	95 25
6.	318 269	283 155	178 171	536 145	154 29	432 83	
7.	483 376	251 319	128 468	392 444	227 38	734 27	
8.	404 100	248 542	690 110	305 208	609 37	266 19	
9.	350 250	263 707	506 308	439 152	216 90	517 43	

SENDING FLOWERS TO THE CITY

Joe and Alice picked flowers which their father sent to the city to be sold.

Find how many roses were sent to the city each day. Find how many carnations were sent each day.

Monday

1. 36 yellow roses
   24 white roses

2. 18 pink carnations
   18 white carnations

Wednesday

3. 60 pink roses
   24 yellow roses

4. 36 red carnations
   18 white carnations

Friday

5. 36 pink roses
   36 red roses

6. 48 pink carnations
   27 white carnations

*7. In the 3 days how many roses in all were sent to the city? How many carnations in all were sent?

COLUMN ADDITION

Add the following. Begin at the bottom and add up. Check by adding down:

1.	3	2	9	3	3	8	4	4
	4	6	5	5	5	7	5	7
	6	4	4	6	8	0	7	8
	7	9	4	9	6	6	9	5
2.	1	2	2	5	1	2	6	3
	9	6	5	3	5	2	6	9
	2	9	3	7	4	7	4	8
	7	7	6	6	8	9	7	4
	7	4	8	5	7	9	5.	6

3.	58	13	54	21	69	84	28
	13	85	21	73	71	54	69
	19	98	45	99	13	26	70
	67	38	62	14	18	79	55
4.	13	81	44	57	61	11	78
	89	78	52	26	36	46	87
	55	33	29	85	19	97	18
	28	19	59	32	64	69	21
5.	12	20	11	21	13	33	22
	23	13	30	12	14	56	32
	69	69	66	92	34	34	37
	51	78	24	29	92	53	68
	15	68	46	11	66	48	67

DRILL IN ADDING BY ENDINGS

Add. Say the answers. Do not write them:

1.	6	16	36	56	12	22	42	82
	3	3	3	3	8	8	8	8
2.	9	29	59	79	7	27	57	67
	5	5	5	5	4	4	4	4
3.	7	37	77	87	6	16	36	56
	8	8	8	8	9	9	9	9

Add 3 orally to each number below. Then do the examples again, adding 6 to each number. Then do them again, adding 5, 9, 4, 7, in turn, to each number:

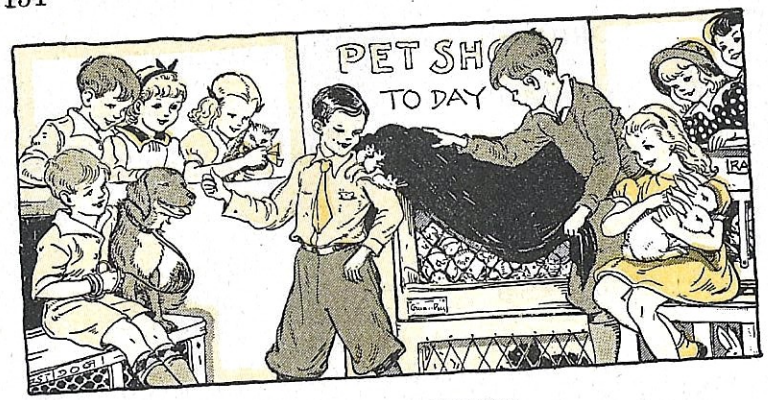
4.	32	62	42	82	37	17	47	67
5.	54	74	64	44	23	83	33	73
6.	48	68	38	78	46	86	56	66
7.	25	75	85	45	39	59	79	89

*8. Count by 4's to 61, beginning with 1; to 62, beginning with 2; to 63, beginning with 3.

*9. Beginning with 1, count by 5's until you pass 60. Repeat, beginning with 2, 3, and 4 in turn.

*10. Beginning with 1, count by 3's until you pass 60. Repeat, beginning with 2 and 3 in turn.

NOTE TO TEACHER. Exercises like 8 to 10 are a valuable form of oral drill in adding by endings and should be given frequently as a preparation for column addition.



OUR PET SHOW

1. We had a pet show yesterday. The children brought 7 dogs, 4 cats, 12 rabbits, 17 guinea pigs, and 23 white mice. How many pets did we have all together at our show?

2. Fred tried to fool his 17 guinea pigs. He put a black cloth over their box. When he took the cloth away, 9 guinea pigs had gone to bed. How many of them did not think night had come?

3. Mary hid 11 small carrots in the room. Her brown rabbit found 3 of them. Her white rabbit found all the other carrots. How many carrots did the white rabbit find?

4. Ed made us laugh. He touched one of his pockets and out came 4 white mice. Then he touched another pocket and out came 5 more. Then he touched a third pocket and out came 3 more. How many mice did Ed have in his pockets?

★ADDING LONGER COLUMNS

In adding a long column, begin at the bottom and add up. Check the sum by adding the column again, beginning at the top and adding down.

In adding the column shown here, think only "7, 12, 16, 19, 24, 26." In checking, think "2, 7, 10, 14, 19, 26." If you cannot add columns quickly in this way, it will help you if you practice often on work like that on page 153.

2
5
3
4
5
7
26

★Practice in Adding

Add without copying, writing the answers on folded paper. Check the work by adding down:

1.	2.	3.	4.	5.	6.	7.
3	4	3	2	1	2	3
1	3	1	0	3	4	4
8	2	7	5	4	6	9
5	9	9	5	9	7	8
3	1	8	4	8	3	7
8	5	9	9	7	1	5

8.	9.	10.	11.	12.	13.	14.
4	3	4	4	6	7	3
3	9	6	5	5	6	9
9	5	7	1	4	1	6
5	2	8	1	9	5	5
2	9	9	3	3	2	4
5	3	2	4	6	7	8

NOTE. For directions on how to use folded paper in writing the answers to addition and subtraction examples, see page 44.

*PRACTICE IN COLUMN ADDITION

Practice until you can add and check 8 examples in 3 minutes. Do not copy the examples. Write the answers on folded paper:

1.	2.	3.	4.	5.	6.	7.	8.
8	9	8	5	8	3	7	5
6	8	6	2	3	2	8	1
4	3	0	9	7	9	4	7
9	7	4	4	4	8	3	6
3	6	7	4	5	8	8	2

9.	10.	11.	12.	13.	14.	15.	16.
5	3	9	6	5	2	8	6
0	6	2	0	6	4	7	4
7	5	8	1	0	3	5	1
2	4	3	5	5	3	2	5
5	9	1	2	6	3	2	4
8	7	4	9	8	9	7	9

Add without copying. Write the answers on folded paper. Check the work by adding down:

17.	18.	19.	20.	21.	22.
64	96	43	45	70	93
91	25	18	38	47	24
16	42	87	53	21	91
32	58	59	77	87	57
94	43	43	94	35	26

23.	24.	25.	26.	27.	28.
22	21	36	92	54	34
38	46	14	24	91	66
16	39	93	65	11	72
98	86	75	76	25	65
36	97	99	59	17	36

HARDER WORK IN CARRYING

George had 485 stamps. He bought 239 more stamps. How many stamps had he then?

This is a harder problem than those which you have had, because to add these numbers you must carry twice. See how it is done.

Think "9, 14." Write 4 and carry 1. Think "1 (carried), 4, 12." Write 2 and carry 1. Think "1 (carried), 3, 7." Write 7.

```
 485
 239
 724
```

The sum is 724. Hence George had 724 stamps.

How do you check your answer? Check it.

Exercises in Addition

1. Bob read 196 pages yesterday and 185 pages to-day. How many pages did he read in both days?

2. Fred picked 127 green apples and 198 red apples. How many apples did he pick in all?

Add without copying, and check your answers:

3.	4.	5.	6.	7.
275	479	189	467	432
366	334	355	455	269

8.	9.	10.	11.	12.
787	189	268	379	598
194	147	685	269	279

13.	14.	15.	16.	17.
395	142	279	726	438
145	169	356	196	279

18.	19.	20.	21.	22.
256	357	168	717	654
398	259	475	193	277

JOE'S TOY ANIMALS

1. Joe is putting his toy animals into the ark. There are 2 elephants, 2 camels, 2 dogs, 2 monkeys, 2 deer, 2 lions, 2 pigs, 2 cows, and 2 goats. Count these animals by 2's and tell how many animals there are all together.

2. Mary gave Joe 2 cats, 2 rabbits, 2 tigers, 2 horses, 2 bears, and 2 squirrels. Count Mary's animals by 2's. How many did she give Joe? How many animals in all did Joe have then?

3. Joe wanted 100 animals in all in the ark. How many more animals did he need to make 100?

4. After he got his 100 animals, the ark was not big enough to hold them. So he bought another ark and put 48 of the animals in that. How many animals were left in the first ark?

5. Joe paid $1.25 for one ark and $.85 for the other one. How much did he pay for both?

PRACTICE IN ADDING

Add the following and check the answers:

1. 599 239	**2.** 165 349	**3.** 357 278	**4.** 378 434	**5.** 477 69
6. 197 223	**7.** 237 285	**8.** 789 182	**9.** 264 458	**10.** 166 79
11. 494 167	**12.** 395 577	**13.** 284 559	**14.** 686 114	**15.** 563 68
16. 279 656	**17.** 688 227	**18.** 195 646	**19.** 512 389	**20.** 382 78
21. 138 765	**22.** 495 285	**23.** 474 347	**24.** 158 579	**25.** 274 86
26. 375 176	**27.** 276 159	**28.** 156 185	**29.** 338 487	**30.** 374 69

Write these numbers in columns and add them:

31. 446 + 476
32. 298 + 548
33. 196 + 668
34. 292 + 219
35. 568 + 236
36. 52 + 28 + 6 + 17
37. 13 + 49 + 35 + 9
38. 4 + 38 + 92 + 16
39. 76 + 15 + 4 + 31
40. 10 + 56 + 29 + 5

WATCHING ZEROS IN ADDITION

1. Mary had \$4.95 in the bank. Monday she put in \$2.05. How much did she have in the bank then?

You must add \$4.95 and \$2.05.
Think "5 + 5 = 10." Write 0 and carry 1.
Think "1 + 9 = 10." Write 0 and carry 1.
Think "1 + 2 + 4 = 7." Write 7.
The sum is \$7.00, so Mary had \$7.00 in the bank.

$$\begin{array}{r} \$4.95 \\ 2.05 \\ \hline \$7.00 \end{array}$$

2. Jane bought a hat for \$1.75 and a dress for \$4.75. How much did both things cost?

3. Tom spent \$.75 for a baseball and \$1.25 for a baseball glove. How much in all did he spend?

Add the following and check the work:

4.	\$1.97 6.08	\$8.86 .64	\$1.07 4.95	\$5.24 1.76	\$ .72 7.58
5.	\$7.86 .18	\$7.95 1.08	\$4.65 2.35	\$2.08 4.94	\$3.71 6.29
6.	\$1.47 .53	\$4.56 3.49	\$4.15 1.87	\$3.78 .24	\$3.76 1.24
7.	\$2.37 1.69	\$ .43 5.87	\$3.48 .92	\$ .25 2.75	\$2.34 2.96
8.	\$5.88 2.16	\$3.99 .51	\$4.99 4.05	\$3.91 .69	\$6.75 1.75

DID JOE MAKE A MISTAKE?

Joe's father works in a store. He is teaching Joe to add. He says you have to add correctly in a store. He has asked Joe to do the examples below.

Here are the examples with Joe's answers. Has Joe made any mistakes? Add each example carefully. If you find a mistake, tell what the correct sum should be.

1.	\$9.96 8.76 5.35 \$24.07	\$9.84 7.07 1.57 \$18.38	\$9.93 8.58 3.88 \$22.39	\$7.07 6.47 2.98 \$16.55	\$2.86 9.68 7.29 \$19.83
2.	\$6.34 4.45 4.86 \$15.65	\$3.09 6.48 7.63 \$17.20	\$3.07 7.37 1.56 \$11.00	\$1.52 5.29 6.16 \$12.97	\$6.41 1.16 8.29 \$15.86

Also see if Joe did these correctly:

3.	\$5.58 3.32 1.49 \$11.39	\$4.63 9.22 6.36 \$20.21	\$5.89 .58 1.17 \$7.64	\$5.95 2.81 6.36 \$15.12	\$4.87 5.69 .49 \$11.05
4.	\$6.78 1.54 6.03 \$14.35	\$4.77 4.19 .76 \$9.62	\$8.47 .99 3.58 \$13.04	\$5.78 3.63 4.46 \$13.87	\$4.69 2.56 5.37 \$12.62

DIAGNOSTIC TEST

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Add the following and check the work:

						HELP PAGES
1.	462 283	539 312	237 245	148 471	328 637	73, 76
2.	487 357	672 179	273 559	259 479	495 466	157, 159
3.	377 230	629 71	590 10	704 206	573 208	79, 160
4.	8 4 0 1 8	6 0 5 9 6	6 9 1 6 7	4 4 8 8 2	8 5 0 8 9	8 3 1 7 9	152, 155 156
5.	24 51 61 61	60 68 51 37	25 92 89 38	89 74 11 20	44 64 68 64	97 41 83 64	67, 68 141, 152
6.	51 47 90 96 16	35 63 81 63 21	83 99 25 42 70	33 46 90 97 47	62 58 77 89 30	91 78 62 55 31	152, 156

BUYING AT A SALE

1. Betty needed a new coat. Before the sale the coat was marked $8.75. At the sale the coat was marked $6.00. How much did Betty save by buying the coat at the sale?

2. At the sale Dick bought a new suit for $7.65. If he had bought the suit before the sale, he would have paid $9.75 for it. How much did Dick save?

3. Alice bought a blue dress for $2.50. It had been marked $4.40. How much did Alice save by buying at the sale?

*4. Make up stories about children who bought the things below. Tell how much each one saved.

	Hat	Coat	Dress	Suit
Before sale . . .	$2.35	$7.50	$2.25	$8.50
At sale	$1.60	$5.37	$1.75	$6.46

REVIEW

1. Turn to page 39 and try to give the answers to the 100 subtraction facts in 3 minutes.

Subtract the following and check the work:

2.	488 213	175 152	879 277	596 153	597 314	269 264
3.	863 439	984 366	492 317	765 316	465 48	322 8
4.	709 188	836 160	758 93	753 172	676 284	904 471
5.	647 93	674 257	236 71	888 649	356 47	953 634
6.	714 108	704 54	347 139	500 260	444 50	590 263
7.	507 387	790 460	903 63	986 378	807 30	416 309
8.	282 139	916 215	523 432	533 28	916 796	227 52
9.	272 224	709 59	893 635	906 843	800 470	490 132

HELPS IN PROBLEM SOLVING

1. John has 225 stamps and Ted has 280 stamps. How many more stamps has Ted than John?

2. Mary made 60 popcorn balls for her party. The children ate 52 of them. How many popcorn balls did Mary have left?

3. Grandfather is 56 years old and father is 32 years old. What is the difference in their ages?

4. Ann and Ed were weighed to-day. Ann weighs 56 pounds and Ed weighs 63 pounds. How many pounds less than Ed does Ann weigh?

5. Mr. King had 360 chickens on his farm. Last winter he sold 125 chickens. How many chickens did he have left?

6. Betty picked 24 flowers in the garden and Ann picked 18 flowers. How many more flowers did Betty pick than Ann?

7. John has 96¢. Dick has 48¢. Dick has how many cents less than John?

8. Joe sold 156 papers. George sold 97 papers. What is the difference between the number of papers Joe sold and the number George sold?

To find **how many are left,** you **subtract.**

To find the **difference** between two numbers, you **subtract.**

To answer questions like **how many more than** and **how many less than,** you **subtract.**

ED TAKES A BOAT TRIP

Ed and his mother are going to see Ed's aunt. The trip is 456 miles in all. They went 198 miles in a car. They are going the rest of the way by boat. How many miles will they go by boat?

You must subtract 198 from 456. To do this you must carry or borrow twice.

Additive Method. Think "8 + 8 = 16." Write 8. Carry the 1 of 16 and add it to 9, which makes 10. Think "10 + 5 = 15." Write 5. Carry 1 and add it to 1, which makes 2. Think "2 + 2 = 4." Write 2.

They will go 258 miles by boat. Check the work by adding up.

```
 456
 198
 258
```

Take-Away Method. Since you cannot take 8 from 6, borrow 1 from 5 to make 16. Think "8 from 16, 8." Write 8. Since you borrowed 1 from 5, think of 5 as 4. Since you cannot take 9 from 4, borrow 1 from 4 to make 14. Think "9 from 14, 5." Write 5. Since you borrowed 1 from 4, think of 4 as 3. Think "1 from 3, 2." Write 2.

They will go 258 miles by boat. Check by adding up.

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 456
 198
 258
```


PROBLEMS AND PRACTICE

1. The 322 children in Jane's school went to the lake for a picnic. If 165 of them were girls, how many boys were there?

2. Bob has a new story book that has 265 pages. Bob has read 189 pages of this book. How many more pages has Bob to read?

3. Ned has 245 hens. He has 186 brown hens and the rest are white. How many white hens has he?

Subtract. Check your answers by adding up:

4.	752 454	820 393	965 796	741 172	951 276	334 188
5.	933 674	820 551	636 197	531 148	723 295	713 359
6.	811 273	933 265	930 456	852 463	641 484	787 698
7.	475 197	643 489	911 769	723 277	736 498	434 149
8.	810 549	534 165	971 272	731 336	740 162	972 195
9.	820 688	658 159	945 389	620 375	856 477	732 365

MORE WORK IN SUBTRACTION

1. Alice had saved \$6.34. Then she spent \$.85 for a present. How much did she have left?

You must subtract 85 from 634.

Additive Method. Think "5+**9**=14." Write 9. Carry 1 and add it to 8, which makes 9. Think "9+**4**=13." Write 4. Carry 1, thinking "1 (carried) + **5** = 6." Write 5.

\$6.34
.85
\$5.49

Alice had \$5.49 left. Check by adding up.

Take-Away Method. Since you cannot take 5 from 4, borrow 1 from 3 to make 14. Think "5 from 14, **9**." Write 9. Think of 3 as 2. Why? Since you cannot subtract 8 from 2, borrow 1 from 6 to make 12. Then think "8 from 12, **4**." Write 4.

\$6.34
.85
\$5.49

Think of 6 as 5. Why? There is nothing to subtract from 5, hence think "0 from 5, **5**." Write 5.

Alice had \$5.49 left. Check the work by adding up.

2. Tom had \$2.60. He spent \$.95 for some white rabbits. How much money did he have left?

Subtract. Check your answers by adding up:

3.	691 97	736 78	425 58	\$3.40 .84	\$1.78 .89	\$3.42 .67
4.	925 49	665 87	315 76	\$7.63 .97	\$9.34 .86	\$6.33 .44
5.	714 58	607 88	262 63	\$3.13 .46	\$9.12 .24	\$4.14 .38

WATCHING ZEROS IN SUBTRACTION

1. Find the difference between 476 and 900.

Additive Method. Think "6+**4**=10." Write 4. Carry 1 and add it to 7, which makes 8. Think "8 + **2** = 10." Write 2.

Carry 1 and add it to 4, which makes 5. Think "5 + 4 = 9." Write 4.

900
476
424

The difference is 424. How do you check the work?

Take-Away Method. In *A* below, you see that you cannot take 6 from 0 and that you cannot borrow 1 from the next number since it is also 0. Hence think of 900 as 890 + 10 and think of it written as shown in *B*.

A	*B*
	10
900	**890**
476	**476**
	424

Then think "6 from 10, **4**" and write 4. Think "7 from 9, **2**" and write 2. Think "4 from 8, **4**" and write 4.

The difference is 424. How do you check the work?

Always write the problem as shown in *A*, but think of it as shown in *B*. Do not write the work as in *B*.

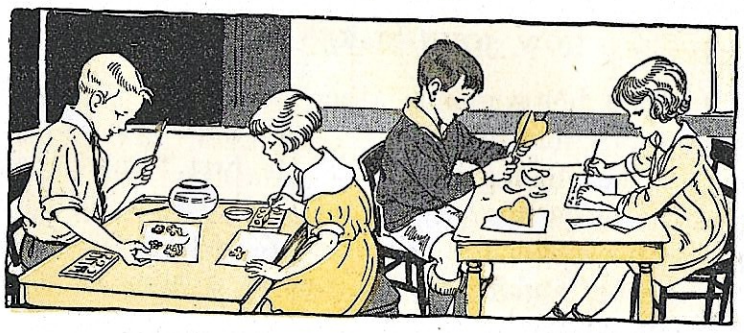
Subtract without copying and check the work:

2.	400 229	900 195	700 434	800 201	500 305	900 286
3.	600 353	202 99	800 149	330 147	920 748	600 172
4.	908 269	603 495	180 91	500 352	700 108	200 99

SUBTRACTING DOLLARS AND CENTS

Subtract without copying. Write the answers on folded paper. Check the work by adding up:

1.	\$8.65 3.98	\$4.46 2.87	\$6.34 .66	\$7.35 4.76	\$5.43 2.49
2.	\$6.22 1.95	\$8.12 5.58	\$7.12 3.93	\$9.23 7.64	\$4.38 .59
3.	\$3.12 .79	\$9.57 3.68	\$7.94 2.98	\$6.24 4.37	\$6.20 2.53
4.	\$8.15 6.86	\$2.16 .49	\$9.11 4.13	\$3.77 1.99	\$5.13 1.35
5.	\$1.00 .37	\$4.00 1.09	\$8.02 .99	\$2.00 .48	\$6.50 .83
6.	\$8.00 4.64	\$9.00 2.09	\$2.06 .78	\$9.00 6.06	\$4.00 1.53
7.	\$2.40 .96	\$3.00 1.26	\$6.00 3.05	\$6.10 2.44	\$5.01 .27
8.	\$7.00 5.02	\$8.30 3.55	\$8.00 .97	\$9.02 3.76	\$4.40 2.68



★MAKING VALENTINES

The children in the third grade were getting ready for a valentine sale.

1. Ed had some red paper and some gold paper. He cut out 36 red hearts and 19 gold ones. How many more red hearts than gold hearts did he have?

2. Two children helped Ed one afternoon by writing on the valentines that he cut out. Jack wrote on 13 valentines and Ann wrote on 18 valentines. On how many valentines did they write all together?

3. Alice and Billy made 15 valentines. They painted 2 flowers on each valentine. How many flowers did they paint in all?

4. Jane made 18 valentines. She sold $\frac{1}{2}$ of them to Mary. How many valentines did Mary buy?

5. The children made 120 valentines in all. There were 55 heart valentines. The rest were flower valentines. How many flower valentines did the children make?

HOW JOHN MAKES CHANGE

1. John helps in his father's store. Mary buys some candy for 18¢ and gives John a quarter. John makes the change like this: He first thinks 18¢; then he picks up 2 cents and thinks 20¢; then he picks up a nickel and thinks 25¢. As he gives Mary the 2 cents and the nickel, one at a time, he says "18, 19, 20, 25."

2. Betty buys a doll for 16¢ and gives John a quarter. Tell what John says as he gives Betty the change. How much does he give Betty?

3. Alice buys a pencil for 4¢ and gives John a quarter. He gives her 1 penny and 2 dimes in change. Is the change right?

4. Joe buys some paper for 8¢. He gives John a quarter. Tell how John counts the change as he gives it to Joe.

5. In ex. 4 the change that Joe got was 2 pennies and 3 nickels. Was the change right? Tell another way that John could have made the change without using 3 nickels. Which way is better?

6. Dick buys a ball for 12¢ and gives John a quarter. John gives him 3 pennies and a dime in change. Is this change right?

7. *Make change from* 25¢ *for things that cost:*

10¢ 20¢ 15¢ 7¢ 3¢ 13¢ 17¢

MAKING CHANGE

1. Jim buys a top for 12¢ and gives the clerk a half dollar. The clerk thinks 12¢; then he picks up 3 cents and thinks 15¢; then he picks up a dime and thinks 25¢; then he picks up a quarter and thinks 50¢. As he gives Jim these coins, one at a time, he says, "12, 13, 14, 15, 25, 50."

2. Tell two other ways that the clerk could have made the change in ex. 1. Which is the best way? Tell why you think so.

3. Mary bought a game for 28¢ and gave the clerk 50¢. The clerk gave her 2 cents, 1 dime, and 2 nickels. Count this change as the clerk did.

4. In ex. 3, when Mary got her change she counted it to see if it was right. She did it like this: She began with 28, then she added the 2 cents and said "30." Then she added the dime and said "40." Then she added 1 nickel and said "45." Then she added the other nickel and said "50." She knew the change was right because the sum was 50. When you count your change, always add like this to see if the change is right.

5. In ex. 3, tell another way the clerk could have made the change without using 2 nickels.

6. *Make change from* 50¢ *for things that cost:*

16¢ 35¢ 22¢ 2¢ 7¢ 43¢ 24¢

MAKING CHANGE

1. Mary bought a book for $.35. She gave the clerk a dollar bill. She got a nickel, a dime, and 2 quarters in change. Was it right? Count the change as the clerk did.

2. In ex. 1, how could the clerk have made the change without using 2 quarters?

3. Jim bought a toy boat for $.78 and gave the clerk a dollar. Make and count out his change.

Tell the change you get and count it if you buy:

4. a doll's hat for 6¢ and pay with a dime.
5. a pencil for 3¢ and pay with a quarter.
6. a toy for 22¢ and pay with 3 dimes.
7. a book for 38¢ and pay with 2 quarters.
8. a cake for 35¢ and pay with a dollar.
9. some candy for 15¢ and pay with a dollar.
10. a book for 29¢ and pay with a dollar.

DIAGNOSTIC TEST

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Subtract and check the work:

						HELP PAGES
1.	597 − 254	659 − 317	178 − 86	155 − 93	148 − 65	**87, 88**
2.	656 − 439	474 − 247	895 − 38	873 − 729	671 − 252	**99, 100**
3.	746 − 195	422 − 262	949 − 583	988 − 94	814 − 431	**101, 103**
4.	300 − 140	313 − 108	806 − 530	540 − 135	.609 − 64	**104**
5.	614 − 265	563 − 366	917 − 79	825 − 366	752 − 368	**167, 168**
6.	813 − 244	316 − 188	712 − 563	862 − 85	431 − 144	**167, 168**
7.	600 − 177	700 − 94	500 − 305	903 − 626	230 − 69	**169**
8.	$4.64 − 2.75	$2.56 − .91	$7.00 − 2.60	$9.00 − 4.65		**108, 170**

MIXED PRACTICE

1. Beginning with 3, count by 2's to 31.
2. Beginning with 1, count by 3's to 31.
3. What is the difference between 600 and 475?
4. Add these numbers: 24, 32, 18, 6, and 43.
5. Which number is larger, X or VIII?
6. Make change from \$1.00 for things that cost:
   25¢ 42¢ 65¢ 18¢ 36¢ 74¢
7. Find the cost of 2 books if 1 book costs 40¢.
8. Write in Roman numerals: 6, 9, 17.
9. Add 8, 3, 2, 9, and 6.
10. Subtract 39 from 86.
11. Multiply 304 by 2.
12. From 493 take 268.

PROBLEMS

1. On five days last week Tom sold the following numbers of papers: 35, 28, 30, 18, and 32. How many papers did Tom sell in all?
2. Tom sold 143 papers each week for 2 weeks. How many papers did he sell in 2 weeks?
3. Mary's father must drive 780 miles on a trip. If he drives 325 miles the first day, how many miles has he left to drive?
4. Joe had \$4.85 in the bank. Uncle Jim gave him \$2.50 for Christmas. If Joe puts this money in the bank, how much will he have then?

CHAPTER VI

MULTIPLYING AND DIVIDING BY 3

MULTIPLYING 3's

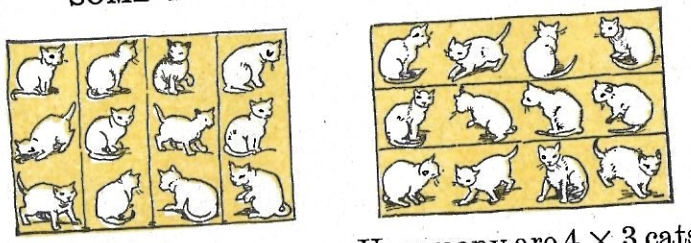
1. Count by 3's to 30, beginning 3, 6, 9.
2. Add these columns. How many are three 3's? four 3's? five 3's? six 3's?

			3
		3	3
	3	3	3
3	3	3	3
3	3	3	3
3	3	3	3
9	12	15	18

3. How many are 3×3? 4×3? 5×3? 6×3?
4. Show by adding how many seven 3's make; eight 3's; nine 3's. How many are 7×3? How many are 8×3? 9×3?
5. If oranges cost 3¢ each, how much will you pay for 4 oranges? for 5 oranges? for 7 oranges?
6. *What numbers should be put where the dots are?*

$6 \times 3 = \ldots$	$8 \times 3 = \ldots$	five 3's are . . .
$9 \times 3 = \ldots$	$4 \times 3 = \ldots$	nine 3's are . . .
$2 \times 3 = \ldots$	$7 \times 3 = \ldots$	four 3's are . . .
$5 \times 3 = \ldots$	$3 \times 3 = \ldots$	seven 3's are . . .

SOME NEW MULTIPLICATION FACTS



1. Look at the picture. How many are 4×3 cats? How many are 3×4 cats? Is 4×3 the same as 3×4? Why?

$$\begin{array}{r} 3 \\ \times\ 4 \\ \hline 12 \end{array} \qquad \begin{array}{r} 4 \\ \times\ 3 \\ \hline 12 \end{array}$$

2. You know that 4×3 is called the **reverse** of 3×4. 4×3 is like 3×4 except that the numbers are *turned around*. Remember that *reverse* means to *turn around*. Does 4×3 have the same answer as 3×4? What is the answer?

Reverses have the same answer.

3. How many are 5×3? How many are 3×5?

4. Try to remember these multiplication facts. You already know the first four facts.

$$\begin{array}{r} 3 \\ \times\ 1 \\ \hline 3 \end{array} \quad \begin{array}{r} 1 \\ \times\ 3 \\ \hline 3 \end{array} \qquad \begin{array}{r} 3 \\ \times\ 2 \\ \hline 6 \end{array} \quad \begin{array}{r} 2 \\ \times\ 3 \\ \hline 6 \end{array} \qquad \begin{array}{r} 3 \\ \times\ 4 \\ \hline 12 \end{array} \quad \begin{array}{r} 4 \\ \times\ 3 \\ \hline 12 \end{array} \qquad \begin{array}{r} 3 \\ \times\ 5 \\ \hline 15 \end{array} \quad \begin{array}{r} 5 \\ \times\ 3 \\ \hline 15 \end{array} \qquad \begin{array}{r} 3 \\ \times\ 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ \times\ 6 \\ \hline 18 \end{array} \quad \begin{array}{r} 6 \\ \times\ 3 \\ \hline 18 \end{array} \qquad \begin{array}{r} 3 \\ \times\ 7 \\ \hline 21 \end{array} \quad \begin{array}{r} 7 \\ \times\ 3 \\ \hline 21 \end{array} \qquad \begin{array}{r} 3 \\ \times\ 8 \\ \hline 24 \end{array} \quad \begin{array}{r} 8 \\ \times\ 3 \\ \hline 24 \end{array} \qquad \begin{array}{r} 3 \\ \times\ 9 \\ \hline 27 \end{array} \quad \begin{array}{r} 9 \\ \times\ 3 \\ \hline 27 \end{array}$$

5. Which facts in ex. 4 are *reverses?*

USING THE MULTIPLICATION FACTS

1. What will it cost to buy one of each?

4¢ 3¢ 2¢ 5¢

What will it cost to buy 3 oranges? to buy 6 bananas? to buy 8 apples? to buy 3 pears?

2. If you forget 3×8, think of its *reverse*, 8×3, and give the answer to that. What is it?

Multiply these numbers as quickly as you can:

3. $\begin{array}{r} 3 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 2 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 8 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 1 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 0 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ \times\ 3 \\ \hline \end{array}$

4. $\begin{array}{r} 3 \\ \times\ 5 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 7 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 2 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 6 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 1 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 4 \\ \hline \end{array}$

5. If you write the multiplication facts in a table they must be in the right order. Thus, 3×7 must come after 3×6. What fact comes after 3×4?

6. Mary wrote a table of 3's like this:

$3 \times 1 = \ldots$ $3 \times 5 = \ldots$ $3 \times 9 = \ldots$
$3 \times 3 = \ldots$ $3 \times 7 = \ldots$ $3 \times 6 = \ldots$
$3 \times 2 = \ldots$ $3 \times 4 = \ldots$ $3 \times 8 = \ldots$

Write Mary's table again, putting the facts in the right order. In your table, write the answers.

USING 3's IN PROBLEMS

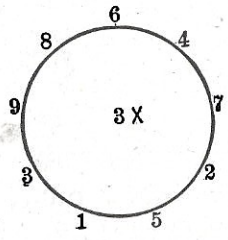
1. It takes Margaret 6 minutes to sew 1 button on her new dress. How many minutes will it take her to sew 3 buttons on her dress?

2. Find the cost of:

3 balls at 9¢ each	3 pencils at 7¢ each
5 pads at 3¢ each	3 games at 8¢ each
3 oranges at 4¢ each	9 apples at 3¢ each

3. When Grace was on a vacation, she wrote 6 letters and 3 times as many post cards. How many post cards did she write?

4. At 3¢ each, how much do 8 stamps cost?



5. Play this game. Point to each number on the circle and multiply it by 3. Then multiply 3 by each number on the circle.

6. Play this game over again. Each time that you multiply, add the number 2 to the answer, like this: $3 \times 6 = 18$ and $18 + 2 = 20$. Say only "20."

Tell what numbers should be put where the dots are:

7.	18 = . . 3's	9 × . . = 27	. . × 3 = 3
8.	15 = . . 3's	3 × . . = 24	. . × 3 = 9
9.	12 = . . 3's	3 × . . = 6	. . × 3 = 27
10.	21 = . . 3's	3 × . . = 0	. . × 8 = 24

PROBLEM TEST B1

1. Joe is going to have a party. He wants to buy some paper hats that cost 2¢ each. How many hats can he buy for 16¢?

2. Tom earned 56¢ one week, 75¢ the next, and 60¢ the third week. How much did he earn in all?

3. In our school there are 53 children in the third grade and 46 children in the fourth grade. How many more children are there in the third grade than in the fourth grade?

4. Fred's mother had 12 apples. She gave half of them to Fred. How many apples did Fred get?

5. Mother bought 2 pies at 24¢ each. How much did the pies cost her all together?

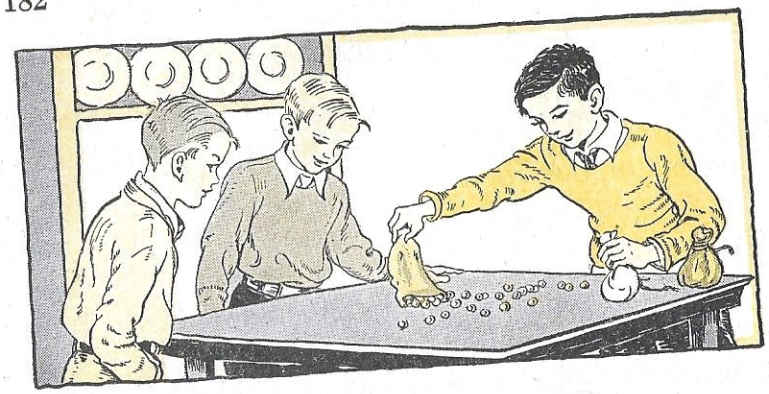
6. Jane bought a dress for $7.50. Betty bought a dress for $5.75. What is the difference in the prices of the two dresses?

7. The new readers for our class cost $6.46, and the new pencils cost $3.58. How much did all these things cost?

8. Bob has 2 bags of marbles. He has 45 marbles in each bag. How many marbles has Bob in all?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

Write down the number of problems you got right on this test. Try to do better on your next problem test.



NED BUYS SOME MARBLES

1. Ned bought 3 bags of marbles. Each bag had 36 marbles in it. How many marbles did Ned buy?

To find how many marbles Ned bought in all, you must multiply 36 by 3.

Think "3 × 6 = 18." Write 8 and carry 1.
Then think "3 × 3 = 9. 9 + 1 (carried) = 10." Write 10 next to 8.
The product is 108. Ned bought 108 marbles.

$$\begin{array}{r} 36 \\ \times\ 3 \\ \hline 108 \end{array}$$

Multiply. Check the work by going over it again:

2.	$\begin{array}{r} 14 \\ \times\ 3 \end{array}$	$\begin{array}{r} 55 \\ \times\ 3 \end{array}$	$\begin{array}{r} 76 \\ \times\ 3 \end{array}$	$\begin{array}{r} 44 \\ \times\ 3 \end{array}$	$\begin{array}{r} 23 \\ \times\ 3 \end{array}$	$\begin{array}{r} 75 \\ \times\ 3 \end{array}$	$\begin{array}{r} 62 \\ \times\ 3 \end{array}$
3.	$\begin{array}{r} 60 \\ \times\ 3 \end{array}$	$\begin{array}{r} 85 \\ \times\ 3 \end{array}$	$\begin{array}{r} 41 \\ \times\ 3 \end{array}$	$\begin{array}{r} 35 \\ \times\ 3 \end{array}$	$\begin{array}{r} 16 \\ \times\ 3 \end{array}$	$\begin{array}{r} 50 \\ \times\ 3 \end{array}$	$\begin{array}{r} 72 \\ \times\ 3 \end{array}$
4.	$\begin{array}{r} 83 \\ \times\ 3 \end{array}$	$\begin{array}{r} 74 \\ \times\ 3 \end{array}$	$\begin{array}{r} 90 \\ \times\ 3 \end{array}$	$\begin{array}{r} 15 \\ \times\ 3 \end{array}$	$\begin{array}{r} 34 \\ \times\ 3 \end{array}$	$\begin{array}{r} 26 \\ \times\ 3 \end{array}$	$\begin{array}{r} 45 \\ \times\ 3 \end{array}$

CARRYING 2 IN MULTIPLICATION

1. Grace bought 3 boxes of cookies for her party. Each box had 28 cookies in it. How many cookies were there in all?

You must multiply 28 by 3. This time when you multiply, you have to carry 2.

Think "3 × 8 = 24." Write 4 and carry 2.
Then think "3 × 2 = 6. 6 + 2 (carried) = 8." Write 8.
The product is 84. Grace had 84 cookies in all.
Check the work by going over it again.

$$\begin{array}{r} 28 \\ \times\ 3 \\ \hline 84 \end{array}$$

2. Jim sold papers on 3 days. He sold 39 papers each day. How many papers did he sell in all?

3. The bus that goes by Ned's house runs 19 miles on each trip. How many miles does it go in 3 trips?

Multiply. Check the work by going over it again:

4.	$\begin{array}{r} 29 \\ \times\ 3 \end{array}$	$\begin{array}{r} 67 \\ \times\ 3 \end{array}$	$\begin{array}{r} 98 \\ \times\ 3 \end{array}$	$\begin{array}{r} 23 \\ \times\ 9 \end{array}$	$\begin{array}{r} 124 \\ \times\ 3 \end{array}$	$\begin{array}{r} 217 \\ \times\ 3 \end{array}$	$\begin{array}{r} 325 \\ \times\ 3 \end{array}$
5.	$\begin{array}{r} 47 \\ \times\ 3 \end{array}$	$\begin{array}{r} 13 \\ \times\ 8 \end{array}$	$\begin{array}{r} 39 \\ \times\ 3 \end{array}$	$\begin{array}{r} 58 \\ \times\ 3 \end{array}$	$\begin{array}{r} 238 \\ \times\ 2 \end{array}$	$\begin{array}{r} 129 \\ \times\ 3 \end{array}$	$\begin{array}{r} 306 \\ \times\ 2 \end{array}$
6.	$\begin{array}{r} 23 \\ \times\ 7 \end{array}$	$\begin{array}{r} 39 \\ \times\ 2 \end{array}$	$\begin{array}{r} 87 \\ \times\ 3 \end{array}$	$\begin{array}{r} 79 \\ \times\ 2 \end{array}$	$\begin{array}{r} 327 \\ \times\ 3 \end{array}$	$\begin{array}{r} 218 \\ \times\ 3 \end{array}$	$\begin{array}{r} 349 \\ \times\ 2 \end{array}$
7.	$\begin{array}{r} 66 \\ \times\ 3 \end{array}$	$\begin{array}{r} 97 \\ \times\ 3 \end{array}$	$\begin{array}{r} 49 \\ \times\ 3 \end{array}$	$\begin{array}{r} 36 \\ \times\ 2 \end{array}$	$\begin{array}{r} 147 \\ \times\ 2 \end{array}$	$\begin{array}{r} 319 \\ \times\ 3 \end{array}$	$\begin{array}{r} 126 \\ \times\ 3 \end{array}$

NEW WORK IN CARRYING

1. Our school play was given 3 times last week. We sold 250 tickets each time it was given. How many tickets did we sell all together?

You must multiply 250 by 3. This time you must carry from the tens' place to the hundreds' place.

Think "3 × 0 = 0." Write 0.
Think "3 × 5 = 15." Write 5 and remember the 1 to be carried.
Think "3 × 2 = 6. 6 + 1 (carried) = 7." Write 7.
The product is 750. 750 tickets were sold in all.
How do you check the work to make sure it is right?

$$\begin{array}{r} 250 \\ \times\ 3 \\ \hline 750 \end{array}$$

2. Bobby's father takes 142 bottles of milk to the school each morning. How many bottles of milk will he take in all on 3 mornings?

3. Helen's mother drove to the lake and back 3 times last week. If each trip was 153 miles, how many miles in all did she drive on the 3 trips?

4. A slow boat travels 253 miles a day. How many miles will it go in 3 days?

5. An airplane travels 170 miles an hour. How far can it go in 3 hours?

6. If an airplane travels 230 miles an hour, how far will it go in 4 hours?

7. Mr. Hill bought 3 boxes of oranges to sell in his store. Each box had 192 oranges in it. How many oranges in all did he buy?

PRACTICE IN MULTIPLYING

Multiply these examples. How do you check the work to make sure that it is right?

1.	32 × 5	30 × 7	306 × 3	225 × 3	263 × 3	317 × 3
2.	13 × 8	31 × 6	252 × 3	191 × 3	113 × 6	130 × 9
3.	30 × 4	54 × 3	203 × 4	162 × 3	223 × 4	241 × 3
4.	23 × 4	32 × 8	103 × 7	131 × 4	231 × 4	272 × 3
5.	13 × 4	33 × 9	181 × 3	130 × 8	292 × 3	170 × 3
6.	31 × 7	30 × 5	273 × 3	232 × 4	131 × 5	108 × 3
7.	94 × 3	23 × 9	132 × 4	493 × 2	123 × 4	131 × 7
8.	32 × 6	87 × 3	290 × 3	230 × 4	304 × 3	118 × 3

LET TOM AND ALICE MEND YOUR TOYS

1. Mary had her doll mended. She paid Alice 17¢ for putting new hair on the doll, 5¢ for mending the doll's shoe, and 7¢ for fixing the doll's eye. How much in all did Mary pay Alice?

2. Joe brought 2 boxes of toy animals for Tom to paint. Each box had 48 animals. How many animals did Tom paint in all?

3. Betty paid Alice and Tom 3¢ for mending some doll's dishes, 5¢ for mending a doll's chair, and 15¢ for putting a new leg on her doll. How much did Betty pay in all?

4. Ed paid Tom 20¢ for painting his large toy boat. Joe paid Tom 8¢ for painting a small boat. How much more did Ed pay than Joe?

5. Last week Tom had 24 kites to mend. Alice mended half of them. How many kites did Alice mend? How many did Tom mend?

MULTIPLYING BY 2 AND 3

Multiply the following examples. Check the work of each example by going over it again:

1.	249 × 2	306 × 2	407 × 2	308 × 3	326 × 2	305 × 3
2.	183 × 2	281 × 3	394 × 2	143 × 3	317 × 3	372 × 2
3.	253 × 3	215 × 2	229 × 3	238 × 2	163 × 3	219 × 3
4.	207 × 3	316 × 3	461 × 2	127 × 3	345 × 2	263 × 3
5.	284 × 2	124 × 3	380 × 2	251 × 3	436 × 2	208 × 2
6.	114 × 3	309 × 3	140 × 3	400 × 2	408 × 2	261 × 3
7.	307 × 3	349 × 2	262 × 3	260 × 3	164 × 2	193 × 3
8.	135 × 2	208 × 3	227 × 2	142 × 3	218 × 3	417 × 2

LEARNING WHEN TO MULTIPLY

1. If 1 ball costs 4¢, how much will 3 balls cost?

2. If 1 pound of butter costs 27¢, how much must you pay for 3 pounds?

3. A top costs 17¢. How much will 2 tops cost?

4. Mrs. Lee saw a rug that costs $31. How much would she have to pay for 3 rugs of that kind?

If you know the cost of 1 thing, you can find the cost of several of these things by multiplying.

5. There are 24 bars of chocolate in 1 box. How many bars of chocolate are there in 3 boxes?

6. If there are 18 crayons in one box, how many crayons are there in 2 boxes?

7. In Frank's schoolroom there are 6 desks in each row. How many desks are there in 3 rows?

8. Jack has planted 3 rows of tomato plants. There are 15 plants in each row. How many tomato plants has he in all?

9. Mary can put 19 arithmetics on 1 shelf of the bookcase in our room. How many arithmetics can she put on 2 shelves?

10. Mr. Hill sells eggs in boxes. He puts 12 eggs in each box. How many eggs are there in 3 boxes?

If you know the number of things in 1 box or in 1 row, you can find the number of things in several of these boxes or in several of these rows by multiplying.

ADDITION AND SUBTRACTION

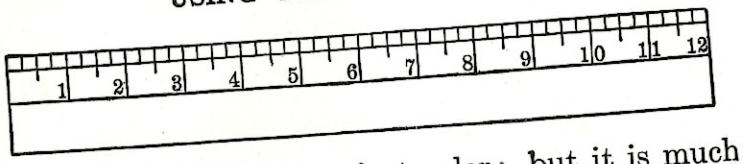
Add and check the work:

1.	88	57	97	69	87	54	95
	40	22	98	24	40	38	95
	14	25	35	42	23	14	26
	87	68	10	41	67	74	13
2.	56	30	57	92	91	42	73
	61	44	33	38	76	36	67
	17	51	18	59	17	79	40
	26	61	66	58	12	29	79

Subtract and check the work:

3.	946	543	716	492	696	718
	565	224	434	426	347	163
4.	633	715	843	977	532	911
	188	317	576	779	349	679
5.	700	200	512	820	504	606
	233	105	204	696	409	26
6.	502	705	847	700	903	800
	18	598	50	70	307	179

USING THE FOOT RULER



This is a picture of a foot ruler; but it is much smaller than a real foot ruler.

1. What do the numbers on the ruler stand for?

A foot ruler is 12 inches long.

2. Measure this line. How many inches long is it?

3. Draw a line 3 inches long; 5 inches long.

4. How many inches is it on your ruler from the number 5 to the number 6? from 7 to 9?

5. Is this book 1 foot long or less than 1 foot long? How many inches long is it? How many inches wide is it?

6. How long is your pencil?

7. On the blackboard draw a line 1 foot 2 inches long; a line 2 feet 4 inches long.

8. How long is your desk? How wide is it?

9. Without using your ruler, draw a line on the blackboard which you think is 2 feet long. Measure it with your ruler to see how near you came. Is your line longer or shorter than 2 feet?

10. Measure the teacher's desk. How many feet and inches long is it? How wide is it?

HOW TALL ARE YOU?

1. Frank makes a small mark on the wall to show how tall Mary is. Then he measures the distance from the floor to the mark with a foot ruler. He finds that Mary is 3 feet 4 inches tall.

2. Frank then measures Alice. She is 3 feet 6 inches tall. Who is taller, Mary or Alice? how much taller?

3. Measure each child in your class. Who is the tallest boy? the tallest girl? the shortest boy?

4. Place a small ball of cotton over a mark on the floor and kick the ball. Measure the distance you kick it. The child who kicks the ball farthest wins.

5. Ribbon and cloth are measured with a yardstick. Count the number of feet on a yardstick.

There are 3 feet in 1 yard.

6. How many inches are there in 1 foot? in 3 feet? Then how many inches are there in 1 yard?

7. How many yards long and wide is your classroom? the blackboard? the playground?

8. Play store, using string for ribbon. Sell 2 yards of ribbon to Grace and 3 yards to Alice.

FEET AND INCHES

Inch and *inches* are sometimes written *in.*; *foot* and *feet* are written *ft.*; *yard* and *yards* are written *yd.*

1. Remember this table of *length*:

12 inches (in.)	= 1 foot (ft.)
3 feet (ft.)	= 1 yard (yd.)
36 inches (in.)	= 1 yard (yd.)

2. Since 1 yd. equals 3 ft., 2 yd. equals 2 × 3 ft., or 6 ft. How many feet are there in 3 yd.? in 4 yd.? in 6 yd.? in 8 yd.? in 10 yd.?

3. George wants to buy a piece of rope 7 yd. long. The rope is sold by the foot. How many feet of rope should he ask for?

4. How many inches are there in 2 yd.? in 3 yd.?

5. How many inches are there in 1 ft.? in 2 ft.? in 5 ft.? in 4 ft.? in 6 ft.?

6. How many inches are there in $\frac{1}{2}$ ft.?

7. Tom is 3 ft. 10 in. tall. How many inches tall is he? Change 3 ft. to inches; then add 10 in.

8. Mary says that she is 3 ft. 7 in. tall. How many inches tall is she?

9. Margaret has a piece of ribbon 1 ft. 4 in. long. How many inches long is it?

***10.** Betty is 3 ft. 9 in. tall. Billy is 47 in. tall. Who is taller, Betty or Billy?

PROBLEMS WITHOUT NUMBERS

Tell whether you would add, subtract, multiply, or divide to get the answer:

1. If you know the cost of 1 pencil, how do you find the cost of several pencils?

2. If you know how much you paid for a book, a pen, a pencil, and a ruler, how do you find how much you paid for them all together?

3. If you know how much you weigh and how much your brother weighs, how do you find the difference in your weights?

4. If you know how much a bicycle costs and that you and Jim will each pay half the cost, how do you find how much you will pay?

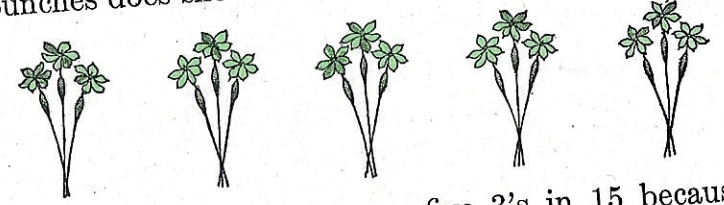
MIXED PRACTICE

Find the answers:

1. $2 \times 309 = ?$
2. $820 \div 2 = ?$
3. $\frac{1}{3}$ of $369 = ?$
4. 837 less $293 = ?$
5. $78+41+33+29 = ?$
6. $\$8.27 - \$1.49 = ?$
7. Find the sum of 32, 74, 25, 98, and 68.
8. Which number is larger, XX or XVIII?
9. How many inches are there in $\frac{1}{2}$ foot?
10. How much more is 83 than 49?
11. Add these numbers: 14, 37, 40, 36, and 22.

DIVIDING INTO 3's

1. Peggy has 15 flowers. She divides them into bunches, putting 3 flowers in a bunch. How many bunches does she have? How many 3's make 15?



2. Peggy says there are five 3's in 15 because $5 \times 3 = 15$. Is she right?

3. $6 \times 3 = 18$. How many 3's are there in 18? How many are $18 \div 3$? How many are $3\overline{)18}$?

4. $4 \times 3 = 12$. How many 3's are there in 12? How many are $12 \div 3$? How many are $3\overline{)12}$?

5. Divide 12 pencils into 3's. How many 3's do you get? Is the answer the same as in ex. 4?

6. Fred wants to know how many 3's there are in 24. So he thinks "What number times 3 makes 24?" He says "$8 \times 3 = 24$, so there are eight 3's in 24." What does $3\overline{)24}$ equal?

Tell what numbers should be put where the dots are:

7. $7 \times 3 = 21$, so there are . . . 3's in 21.
8. . . . $\times 3 = 12$, so there are . . . 3's in 12.
9. . . . $\times 3 = 27$, so there are . . . 3's in 27.
10. . . . $\times 3 = 9$, so there are . . . 3's in 9.

9 NEW DIVISION FACTS

1. Try to remember these new division facts:

$3\overline{)3}^{1}$ $3\overline{)6}^{2}$ $3\overline{)9}^{3}$ $3\overline{)12}^{4}$ $3\overline{)15}^{5}$

$3\overline{)18}^{6}$ $3\overline{)21}^{7}$ $3\overline{)24}^{8}$ $3\overline{)27}^{9}$

2. Mary has a doll's house. She can buy chairs for it at 3¢ each. How many chairs can Mary buy for 12¢? How many 3's are there in 12?

3. Grace has a doll's house. At 3¢ each how many dishes can she buy for 18¢? for 24¢?

4. It costs 3¢ to ride on the merry-go-round. How many times can Jim ride for 15¢?

5. Betty wants a game that costs 24¢. If she saves 3¢ a day, in how many days can she buy it?

6. *Divide. Give the answers as quickly as you can:*

$3\overline{)21}$ $3\overline{)3}$ $3\overline{)24}$ $3\overline{)6}$ $3\overline{)18}$ $3\overline{)9}$ $3\overline{)12}$ $3\overline{)27}$

Tell what numbers should be put where the dots are:

7. six 3's are . . . . . 3's are 6
8. . . . 3's are 12 . . . 3's are 9
9. . . . 3's are 21 . . . 3's are 3
10. . . . 3's are 27 . . . 3's are 24
11. . . . 3's are 15 . . . 3's are 18

LEARNING ABOUT $\frac{1}{3}$

1. Frank has a melon. He divides it into 3 equal parts, as shown at the left.

When *one thing*, like a melon, is divided into 3 equal parts, each part is called *one third* of the whole. One third is written $\frac{1}{3}$.

2. Mary Jane has 12 little chicks. She divides them into 3 equal groups. When a *group of things*, like 12 chicks, is divided into 3 equal parts, each part is called *one third*, or $\frac{1}{3}$, of the whole number.

3. Count how many chicks Mary Jane has in each group. How many are $\frac{1}{3}$ of 12 chicks?

4. Divide 12 by 3. Do you get the same answer as in ex. 3? Is $\frac{1}{3}$ of 12 the same as $12 \div 3$?

Here $12 \div 3$ means 12 divided into 3 equal parts.

To find $\frac{1}{3}$ of a number, divide it by 3.

5. Ann divides 18 marbles equally among 3 boys. How many marbles does each boy get?

Find the following:

6. $\frac{1}{3}$ of 6 $\frac{1}{3}$ of 24 $\frac{1}{3}$ of 3 $\frac{1}{3}$ of 12

7. $\frac{1}{3}$ of 9 $\frac{1}{3}$ of 27 $\frac{1}{3}$ of 21 $\frac{1}{3}$ of 30

8. Find $\frac{1}{3}$ of 21 flags; of 15 pens; of 24 apples.

PROBLEM TEST B2

1. The children were weighed in school to-day. Tom weighs 51 pounds and Alice weighs 44 pounds. What is the difference in their weights?

2. We had 4 buses to take the children in our school to a picnic. If 32 children rode in each bus, how many children went to the picnic?

3. John bought some stamps for his father. How many 3-cent stamps did he get for 24¢?

4. Jane ate her lunch at school to-day. She got soup for 7¢, bread and butter for 4¢, milk for 5¢, and ice cream for 8¢. How much did her lunch cost?

5. It will cost Billy $7 a week to stay at camp. How much will it cost him to stay 3 weeks?

6. Jim wants a game that costs 18¢. His mother will pay half the cost. How much will she pay?

7. Monday we sold 425 tickets to the school ball game. To-day we sold only 298 tickets. How many less tickets did we sell to-day than Monday?

8. In the parade yesterday there were 775 men and 165 boys. How many marched in the parade?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

This test is like Test B1 on page 181. Unless you had all the problems right on Test B1, you should do better this time. Keep your mark on this test.

GEORGE SELLS STAMPS AT THE POST OFFICE

1. The children are playing post office. This morning George took in 68¢ by selling stamps at 2¢ each. How many stamps did he sell?

Find how many 2's there are in 68 in this way:

$$\begin{array}{rl} \underline{34} & \textbf{Quotient} \\ \textbf{Divisor}\ 2\overline{)68} & \textbf{Dividend} \end{array}$$

Think: "There are three 2's in 6." Write 3 over 6.
Think: "There are four 2's in 8." Write 4 over 8.
This shows that George sold 34 stamps.
Check your work by multiplying 34 by 2. This gives 68; this shows that the work is right.

Check

$$\begin{array}{r} 34 \\ \underline{2} \\ 68 \end{array}$$

In the work above, 2 is the **divisor,** 68 is the **dividend,** and 34 is the **quotient.**

2. Joe spent 39¢ at the post office for stamps at 3¢ each. How many stamps did Joe get?

3. Mary paid George 28¢ for some 2-cent stamps. How many stamps did Mary buy?

4. Ed bought some 3-cent stamps from George. If Ed paid 33¢ for them, how many stamps did he get?

DIVIDING BY 2 AND 3

Divide. Check the work by multiplying:

1. $2\overline{)82}$ **2.** $2\overline{)64}$ **3.** $2\overline{)48}$ **4.** $2\overline{)26}$ **5.** $2\overline{)88}$

6. $2\overline{)24}$ **7.** $2\overline{)84}$ **8.** $2\overline{)62}$ **9.** $3\overline{)96}$ **10.** $3\overline{)99}$

11. $3\overline{)39}$ **12.** $2\overline{)22}$ **13.** $2\overline{)28}$ **14.** $3\overline{)66}$ **15.** $3\overline{)69}$

16. How do you find $\frac{1}{2}$ of a number? How do you find $\frac{1}{3}$ of a number?

17. Find: $\frac{1}{3}$ of 33; $\frac{1}{3}$ of 93; $\frac{1}{2}$ of 44; $\frac{1}{2}$ of 66.

18. Find: $\frac{1}{2}$ of 46; $\frac{1}{2}$ of 86; $\frac{1}{3}$ of 36; $\frac{1}{3}$ of 63.

19. Mary Ann had 268 shells. She gave half of them to her brother Ned. How many shells did she give to Ned?

Do the work as shown at the right.

$$\begin{array}{r} \underline{134} \\ 2\overline{)268} \end{array}$$

20. Tom has 639 stamps. He wants to sell $\frac{1}{3}$ of them. How many stamps does he want to sell?

***21.** In ex. 20, how many stamps will Tom have left if he sells $\frac{1}{3}$ of them?

Divide. Check the work by multiplying:

22. $2\overline{)482}$ **23.** $2\overline{)644}$ **24.** $2\overline{)824}$ **25.** $2\overline{)886}$

26. $2\overline{)226}$ **27.** $2\overline{)248}$ **28.** $2\overline{)464}$ **29.** $3\overline{)393}$

30. $3\overline{)369}$ **31.** $3\overline{)336}$ **32.** $3\overline{)396}$ **33.** $3\overline{)669}$

34. Find $\frac{1}{2}$ of 628; $\frac{1}{3}$ of 999; $\frac{1}{2}$ of 288; $\frac{1}{3}$ of 96.

35. Find $\frac{1}{3}$ of 636; $\frac{1}{2}$ of 442; $\frac{1}{3}$ of 696; $\frac{1}{2}$ of 42.

LEARNING WHEN TO DIVIDE

1. If 1 marble costs 2¢, how many marbles can you buy for 18¢?

2. Mary bought some apples at 3¢ each. How many apples did she get for 36¢?

3. If I buy some stamps that cost 2¢ each, how many stamps can I get for 48¢?

4. If 1 ticket costs $2, how many tickets can Peggy's father buy for $12?

5. If 1 pair of shoes costs $3, how many pairs of shoes can be bought for $9?

6. Helen paid 3¢ for 1 yard of ribbon. How many yards of this ribbon can she buy for 69¢?

7. Tom's brother saves $2 a week. How many weeks will it take him to save $28?

8. Betty has 18¢. How many oranges can she buy if 1 orange costs 3¢?

9. If pencils cost 2¢ each, how many pencils can Jack get for 14¢? for 16¢?

10. John wants to buy some 2-cent stamps. How many stamps can he get for 22¢?

11. George can buy some bananas at 3¢ each. How many bananas can he get for 15¢?

If you know how much 1 marble or 1 apple costs and how much money you can spend, you divide to find how many marbles or apples you can buy.

EASTER PARTIES

1. The third grade children had an Easter party. The teachers gave the children 186 eggs in all. If each child got 2 eggs, how many children were there? How many 2's are there in 186?

To find out, you must divide 186 by 2.

You cannot divide 1 by 2, so you divide 18 by 2. Think "$18 \div 2 = 9$." Write 9 over the *last* figure of 18: that is, write 9 over 8.

Think "$6 \div 2 = 3$." Write 3 over 6.

There were 93 children at the party.

To check the work, multiply 93 by 2; if you get 186, your answer is right.

$$\begin{array}{r} 93 \\ 2\overline{)186} \end{array}$$

Check

$$\begin{array}{r} 93 \\ \times\ 2 \\ \hline 186 \end{array}$$

2. In ex. 1 if the 186 eggs had been divided so that each child got 3 eggs, how many children would have got eggs?

3. At another Easter party, 219 eggs in all were given to the children. Each child got 3 eggs. How many children were there at this party?

4. Betty had an Easter party at her house. She had 48 eggs in all. Half the eggs were blue and half of them were red. How many red eggs were there? How many blue eggs were there?

5. At Peggy's Easter party there were 63 eggs in all. $\frac{1}{3}$ of the eggs were blue, $\frac{1}{3}$ of them were red, and $\frac{1}{3}$ of them were green. How many eggs of each color were there?

PRACTICE IN DIVIDING

Divide; then check by multiplying:

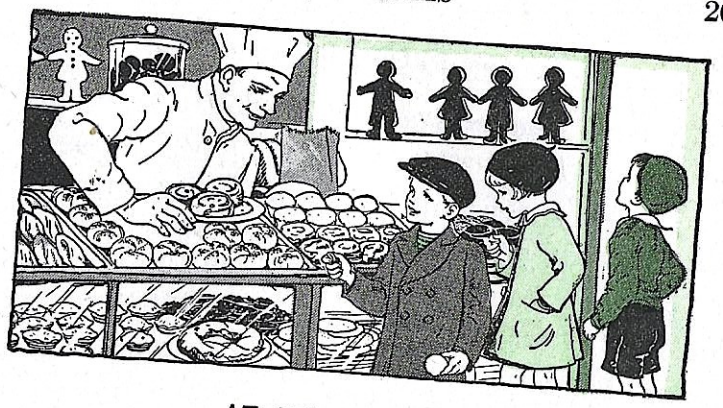
1.	$2\overline{)142}$	$2\overline{)224}$	$2\overline{)106}$	$3\overline{)276}$	$2\overline{)146}$
2.	$2\overline{)166}$	$3\overline{)396}$	$3\overline{)399}$	$3\overline{)156}$	$2\overline{)488}$
3.	$2\overline{)108}$	$3\overline{)243}$	$2\overline{)124}$	$2\overline{)188}$	$2\overline{)426}$
4.	$3\overline{)183}$	$3\overline{)123}$	$3\overline{)693}$	$2\overline{)168}$	$2\overline{)266}$
5.	$2\overline{)162}$	$2\overline{)144}$	$2\overline{)104}$	$3\overline{)279}$	$3\overline{)636}$
6.	$2\overline{)184}$	$3\overline{)993}$	$2\overline{)846}$	$3\overline{)129}$	$3\overline{)699}$
7.	$2\overline{)148}$	$3\overline{)966}$	$2\overline{)164}$	$2\overline{)128}$	$3\overline{)246}$
8.	$3\overline{)186}$	$2\overline{)228}$	$3\overline{)216}$	$2\overline{)126}$	$2\overline{)888}$

Find the following and check by multiplying:

9.	$\frac{1}{2}$ of 182	$\frac{1}{2}$ of 102	$\frac{1}{2}$ of 244	$\frac{1}{3}$ of 69
10.	$\frac{1}{3}$ of 189	$\frac{1}{3}$ of 126	$\frac{1}{3}$ of 273	$\frac{1}{2}$ of 68
11.	$\frac{1}{2}$ of 122	$\frac{1}{3}$ of 159	$\frac{1}{3}$ of 213	$\frac{1}{2}$ of 86
12.	$\frac{1}{2}$ of 282	$\frac{1}{2}$ of 666	$\frac{1}{3}$ of 969	$\frac{1}{3}$ of 33
13.	$\frac{1}{3}$ of 249	$\frac{1}{3}$ of 153	$\frac{1}{2}$ of 186	$\frac{1}{2}$ of 42

14. To find $\frac{1}{2}$ of a number, I divide by . . .

15. To find $\frac{1}{3}$ of a number, I divide by . . .



AT THE BAKERY

1. Mary's father has a bakery. He sells cup cakes for 3¢ each. How much does he get when he sells 5 cup cakes? when he sells 8 cup cakes?

2. A chocolate cake sells for 48¢. How much does he get for 2 of these cakes?

3. To-day he got $9.05 for all his pumpkin pies and $7.72 for his apple pies. How much more did he get for the pumpkin pies than for the apple pies?

4. He sold Mrs. Smith 3 loaves of nut bread for 63¢. How much did she pay for each loaf?

5. This morning he made 48 sugar cookies, 72 nut cookies, and 60 brown cookies. How many cookies did he make all together?

6. Last Saturday he took in 96¢ for gingerbread boys. He sold each gingerbread boy for 3¢. How many gingerbread boys did he sell?

any five PROBLEMS

First tell whether you add, subtract, multiply, or divide to get the answer. Then find the answer.

1. How much will it cost to go by bus to the country and back if it costs 85¢ each way?

2. Mary Ann has a piece of red ribbon 18 feet long. How many yards of ribbon has she?

3. Bob earns 75¢ a week working for his father. How much will he earn in 2 weeks?

4. Alice bought 3 dozen cookies at 18¢ a dozen. How much did the cookies cost?

5. Tom is 56 inches tall. Mary is 48 inches tall. How many inches taller than Mary is Tom?

6. At the store Joe paid $.73 for a book. He gave the clerk $1.00. How much change did he get?

7. Billy puts $\frac{1}{3}$ of all the money he earns in the bank. He earned 69¢ last week. How much did he put in the bank?

8. Father bought 3 tickets to the circus. If each ticket cost 35¢, how much did he pay for them all?

9. Fred wants to go fishing next Saturday. A pole will cost 25¢, a fish line will cost 15¢, and some hooks will cost 10¢. How much will it cost him to buy all these things?

10. Peggy has 15¢. Chocolate bars cost 3¢ each. How many chocolate bars can she buy for 15¢?

WHICH ONE IS IT?

Tell the one that gives the right answer:

1.	Which one is 3 ft. long?	1 in.	1 ft.	1 yd.
2.	Which one is 36 in. long?	1 ft.	1 yd.	1 in.
3.	Which one is the longest?	2 in.	8 in.	1 ft.
4.	Which one is the longest?	1 yd.	2 ft.	3 in.
5.	Which one is the shortest?	1 ft.	1 in.	1 yd.
6.	Which one is the longest?	$\frac{1}{2}$ ft.	2 in.	8 in.
7.	Which one is 1 yd. long?	2 ft.	3 ft.	4 ft.
8.	Which one is 1 yd. long?	2 ft.	3 ft.	1 ft.
9.	Which one is the longest?	6 in.	6 yd.	6 ft.
10.	Which one is 2 ft. long?	18 in.	1 yd.	24 in.
11.	Which one is the longest?	39 in.	3 ft.	2 yd.
12.	Which one is 1 ft. long?	9 in.	12 in.	16 in.
13.	Which one is 3 ft. long?	12 in.	29 in.	36 in.

Tell which one gives the right answer:

14.	Which one is longer than a yard?	5 ft.	3 ft.
15.	Which one is shorter than a foot?	11 in.	20 in.
16.	Which one is shorter than a yard?	46 in.	30 in.
17.	Which one is longer than a foot?	12 in.	15 in.
18.	Which one is nearest to a foot?	8 in.	10 in.
19.	Which one is nearest to a yard?	34 in.	28 in.
20.	Which one is nearest to a yard?	2 ft.	33 in.

DIAGNOSTIC TEST

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Multiply these numbers: HELP PAGES

1.	3	8	3	7	3	4	3	177–179
	6	3	3	3	9	3	5	

Multiply and check the work:

2.	23	26	34	65	52	182
	3	3	3	3	3	
3.	19	47	23	59	218	183
	3	3	8	3	3	
4.	141	262	232	121	493	185, 187
	3	3	4	7	2	

Divide these numbers:

5.	$3\overline{)9}$	$3\overline{)24}$	$3\overline{)18}$	$3\overline{)12}$	$3\overline{)27}$	195
6.	$2\overline{)84}$	$3\overline{)36}$	$2\overline{)44}$	$3\overline{)933}$	$2\overline{)862}$	199
7.	$3\overline{)153}$	$2\overline{)128}$	$2\overline{)188}$	$3\overline{)249}$	$2\overline{)164}$	202

Give the answers to the following:

8. $\frac{1}{3}$ of 96 $\frac{1}{2}$ of 428 $\frac{1}{3}$ of 156 199, 202

CHAPTER VII

MULTIPLYING AND DIVIDING BY 4 AND 5

QUARTS AND PINTS

1 gal. 1 qt. 1 pt.

1. Ann's mother buys a quart of milk a day. One day the milkman left 2 pints of milk instead of a quart. Do 2 pints equal 1 quart?

2. Fill a pint bottle with water and pour it into an empty quart bottle. Then pour another pint into the quart bottle. Does this fill the quart bottle? How many pints make a quart?

3. Oil and syrup are often sold by the gallon. Try to find an empty gallon can. Pour a quart of water into it. Keep on pouring quarts into the can until it is full. How many quarts make 1 gallon?

2 pints (pt.)	= 1 quart (qt.)
4 quarts (qt.)	= 1 gallon (gal.)

4. How many pints of milk will make 1 gallon?

PINTS, QUARTS, AND GALLONS

1. Tom's mother poured a pint of milk into 2 glasses. It took the whole pint to fill the 2 glasses. How many glasses of milk make 1 pint? How many glasses of milk make 1 quart?

1 pint of milk fills 2 glasses.

2. Every child should drink 1 qt. of milk a day. How many glasses of milk is that? how many pints? How much milk do you drink each day?

3. If 1 pint of milk makes 2 glasses of milk, how many glasses of milk will $\frac{1}{2}$ pint make?

4. What part of a quart is a pint?

5. How many glasses of milk can you get from 2 qt. of milk? from 3 qt.? from a gallon?

6. How many quarts are there in $\frac{1}{2}$ gallon?

Tell which is more:

7. 3 qt. or 1 gal.
8. 7 qt. or 1 gal.
9. 9 qt. or 2 gal.
10. 3 pt. or 1 qt.
11. 4 pt. or 2 qt.
12. 3 qt. or $\frac{1}{2}$ gal.

Find the cost of each of these:

13. 2 quarts of milk at 18¢ a quart.
14. 3 glasses of milk at 5¢ a glass.
15. 6 glasses of lemonade at 3¢ a glass.
16. 5 gal. of gasoline at 22¢ a gallon.

MULTIPLYING 4's

1. Count by 4's to 40.

2. Add these columns. How many are three 4's? four 4's? five 4's? six 4's? How many are 3×4? 4×4? 5×4? 6×4?

			4
		4	4
	4	4	4
4	4	4	4
4	4	4	4
4	4	4	4
12	16	20	24

3. By adding columns of 4's, find how many seven 4's are; eight 4's; nine 4's. How many are 7×4? 8×4? 9×4?

4. Tom is making some toy wagons. He needs 4 wheels for each wagon. How many wheels does he need to make 5 wagons? 6 wagons? 8 wagons?

5. Jim has some large red apples. He sells them at 4¢ each. How much does he get for 4 apples? for 7 apples? for 9 apples?

6. Mary made 5 qt. of lemonade. How many glasses of lemonade would 5 qt. make?

7. It cost Mary 4¢ a quart to make the lemonade. How much did the 5 qt. cost?

What numbers should be put where the dots are?

8. $6\times4 = \ldots$ $5\times4 = \ldots$ $2\times4 = \ldots$
9. $9\times4 = \ldots$ $8\times4 = \ldots$ $7\times4 = \ldots$
10. $3\times4 = \ldots$ $1\times4 = \ldots$ $4\times4 = \ldots$

MORE NEW MULTIPLICATION FACTS

1. What does 6×4 equal? What does 4×6 equal? Is 4×6 the reverse of 6×4? What do you remember about reverses?

2. What is the answer to 8×4? to 4×8? What is the answer to 9×4? to 4×9?

3. Remember these multiplication facts. You already know the first six facts.

4	1	4	2	4	3	4	5	4
1	4	2	4	3	4	5	4	4
4	4	8	8	12	12	20	20	16

4	6	4	7	4	8	4	9	◆
6	4	7	4	8	4	9	4	
24	24	28	28	32	32	36	36	

4. Joe says that one fact helps him to learn another one. He says "five 4's are 20, so six 4's must be 4 more than 20, or 24." Is Joe right?

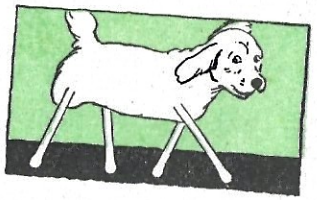
5. If Joe knows that six 4's are 24, how does he tell how many seven 4's are?

Multiply these numbers as quickly as you can:

6.	4	4	4	7	4	1	0	9	4
	9	2	8	4	3	4	4	4	4
7.	5	4	6	2	4	4	4	8	3
	4	7	4	4	5	0	6	4	4

A BIRTHDAY PARTY

1. Alice is making candy dogs to give to some of her friends at her birthday party. It takes 4 sticks to make the legs for each dog. How many sticks will it take to make the legs for 4 dogs? 6 dogs? 7 dogs? 9 dogs?



2. Alice is going to give each child a big dish of ice cream. One quart of ice cream will make 4 big dishes of ice cream. How many big dishes of ice cream can she get from 2 qt.? from 3 qt.?

*3. Suppose 9 children come to the party and that each child gets 1 dish of ice cream. Alice gets 1 dish also and her mother gets one. Are 3 qt. of ice cream enough for them all?

*4. Will there be any ice cream left over? If so, how many dishes? Who will get that?

5. If Alice gives 4 cookies to each child, how many cookies will it take for 9 children?

*6. There are 12 cookies in 1 dozen. In ex. 5, will 3 dozen cookies be enough for 9 children if each child gets 4 cookies? Should Alice buy more than 3 dozen cookies? Tell why you think so. How many dozen cookies do you think she should buy?

7. At 12¢ a dozen, what is the cost of 3 dozen cookies? of 4 dozen cookies?

PRACTICE IN MULTIPLYING

1. Play the game in ex. 5 on page 180. This time put 4 instead of 3 in the middle of the circle.

Tell what numbers should be put where the dots are:

2.	$4 \times \ldots = 24$	. . . 4's = 16	. . . $\times 4 = 32$
3.	$4 \times \ldots = 8$	. . . 4's = 28	. . . $\times 4 = 20$
4.	$4 \times \ldots = 36$	. . . 4's = 20	. . . $\times 4 = 24$
5.	$4 \times \ldots = 4$	. . . 4's = 12	. . . $\times 4 = 16$

Multiply these numbers orally:

6.	9	4	3	4	0	4	4	7	1
	3	9	3	2	4	8	3	4	4
7.	3	4	4	8	3	9	3	5	2
	8	4	7	2	9	4	7	4	9
8.	7	2	4	7	5	8	3	0	2
	3	4	0	2	3	4	4	2	2
9.	5	9	3	6	4	8	4	3	5
	3	2	6	4	5	3	6	4	2

10. Do ex. 6 to 9 again in a new way. Each time after you multiply, add 2 to the answer. Thus, in ex. 6, say "$3 \times 9 = 27$. $27 + 2 = 29$." Give only the answer, 29. Do each example this way.

PROBLEM TEST B3

1. Bob sold 25 papers on Monday, 19 papers on Tuesday, and 31 papers on Wednesday. How many papers did he sell in all?

2. Tom has a flower garden. He picked 24 flowers this morning and gave $\frac{1}{3}$ of them to Betty. How many flowers did he give Betty?

3. Mr. Lee can buy a large radio set for $89 or a small radio set for $35. What is the difference in the prices of the two radio sets?

4. Betty made candy for the school fair. She put 20 pieces in each box and had 6 boxes. How many pieces of candy in all did she put in the boxes?

5. Mary had $8.12 in the school bank. She put in $7.89. How much did she have in the bank then?

6. Alice made 42 pieces of chocolate candy. Jane made 28 pieces. How many more pieces did Alice make than Jane?

7. Miss Day paid 15¢ for some 3-cent pencils. How many pencils did she buy?

8. Ann bought 3 tickets for a show at 15¢ each. How much did she pay for all of them?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

This test is like Tests B1 and B2, pages 181 and 197. You should have all the problems right on this test.

RENTING A BOAT

1. Ted and Joe rented a rowboat for $1.50 a week. They used it for 4 weeks. How much did they pay in all to rent the boat?

Multiply dollars and cents just as you multiply other numbers. Then put a dot before the last two right-hand figures in the answer, to separate the dollars from the cents. The dot is called a decimal point.

$$\begin{array}{r} \$1.50 \\ \times\ \ 4 \\ \hline \$6.00 \end{array}$$

It cost the boys $6.00 to rent the boat.

2. The boys could have rented a large boat for $2.40 a week. How much would the boys have paid to rent the large boat for 4 weeks?

3. One day Ted's father rented a motor boat for 4 hours and took Ted and his friends for a ride. He paid $1.30 an hour. How much did Ted's father pay to rent the motor boat for 4 hours?

4. It costs $4.50 a week to rent a sailboat. How much will it cost to rent it for 2 weeks?

MULTIPLYING DOLLARS AND CENTS

1. Helen needs 4 quarts of ice cream for her party. How much will it cost at 65¢ a quart?

First write 65¢ as $.65. Then multiply just as you multiply other numbers. Write the decimal point before the last two figures in the answer to separate the dollars from the cents.

$$\begin{array}{r} \$\ .65 \\ \times\ \ 4 \\ \hline \$2.60 \end{array}$$

You see that the ice cream will cost $2.60.

2. Ned bought 4 tickets to the circus. Each ticket cost 75¢. How much did he pay for them?

Multiply. Check the work by going over it again:

3.	$.63 × 4	$.24 × 6	$1.30 × 4	$2.23 × 4	$1.52 × 4
4.	$.44 × 8	$.41 × 7	$1.14 × 7	$1.04 × 6	$2.54 × 2
5.	$.24 × 9	$.89 × 4	$4.84 × 2	$2.03 × 4	$1.04 × 9
6.	$.76 × 4	$.42 × 8	$3.27 × 3	$1.41 × 5	$4.00 × 2
7.	$.97 × 4	$.55 × 4	$1.40 × 6	$1.62 × 4	$1.04 × 7
8.	$.34 × 7	$.83 × 4	$1.43 × 3	$3.35 × 2	$1.41 × 6

PRACTICE IN MULTIPLYING

Multiply. Check by going over the work:

1.	41 × 6	24 × 5	42 × 7	\$1.94 × 2	\$1.25 × 3	\$2.00 × 4
2.	34 × 8	40 × 6	14 × 9	\$2.17 × 4	\$1.42 × 4	\$2.54 × 3
3.	89 × 2	44 × 9	47 × 3	\$3.70 × 2	\$1.60 × 4	\$1.41 × 7
4.	43 × 5	58 × 3	76 × 2	\$1.15 × 4	\$1.04 × 5	\$1.83 × 3
5.	29 × 4	34 × 6	43 × 9	\$1.14 × 6	\$3.62 × 2	\$1.40 × 7

MIXED PRACTICE

Find the answers to these examples:

1. $387 - 29 = ?$
2. $139 + 54 = ?$
3. $468 \div 2 = ?$
4. $4 \times 122 = ?$
5. $\frac{1}{3}$ of $66 = ?$
6. $\frac{1}{2}$ of $62 = ?$
7. How many quarts are there in 2 pints?
8. How many feet are there in 75 yards?
9. What is the difference between 17 and 100?
10. How many 2's are there in 128?
11. Multiply 172 by 3.
12. Divide 366 by 3

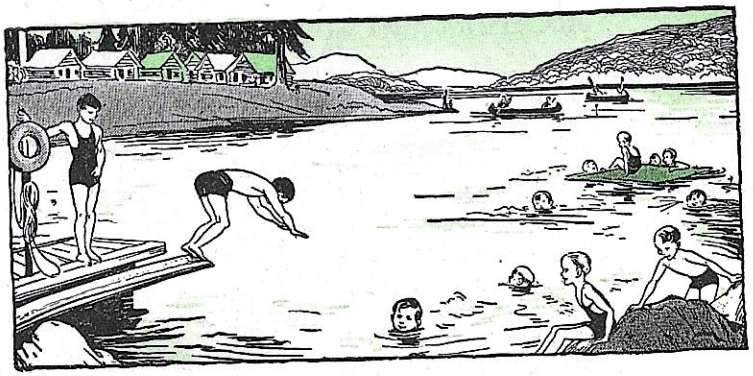
ADDITION AND SUBTRACTION

Add the following and check the work:

1.	89 42 13	59 37 22	47 40 35	68 55 13	47 28 29	27 31 68	16 27 68
2.	63 80 39 17	52 68 96 88	94 70 24 85	53 91 55 69	13 74 99 16	79 52 48 57	45 89 53 68
3.	67 42 76 16	23 41 95 34	81 99 22 26	76 30 21 16	91 67 81 75	64 74 89 39	98 60 75 67

Subtract the following and check the work:

4.	600 499	861 493	871 685	928 699	700 385	645 397
5.	705 176	814 279	643 157	432 189	800 103	987 489
6.	554 376	600 231	834 575	926 169	921 374	746 587



BILLY'S VACATION AT CAMP

1. Last summer Billy had 14 days in camp. This summer he had 49 days. In two summers Billy had . . . days all together in camp.

2. How many more days did Billy spend in camp this year than last year?

3. This summer Billy went on the 8-mile walk to Green Lake. Next summer he wants to walk to Great Hill, which is twice as far. The walk to Great Hill is . . . miles.

4. Last year there were 143 boys in camp. This year there were 2 times as many boys. How many boys were there in camp this year?

5. Last summer Billy could swim only to a rock that is 40 yards from shore. This year he could swim to the other side of the lake, which is 220 yards wide. How much farther could Billy swim this summer than last summer?

PROBLEMS WITHOUT NUMBERS

Tell whether you would add, subtract, multiply, or divide to get the answer:

1. If you know the cost of your sweater and also the cost of Tom's sweater, how do you find how much more one sweater cost than the other?

2. If you know the number of miles you rode your bicycle this morning and also the number of miles you rode this afternoon, how do you find the number of miles you rode in all?

3. If you know how much it costs to buy one pair of stockings, how do you find how much it will cost to buy three pairs of stockings?

4. If you know your brother's age and also your father's age, how do you find how much older your father is than your brother?

MIXED PRACTICE

1. How many are 2×235?
2. How many 3's are there in 129?
3. Find the difference between 390 and 274.
4. How many cookies are there in 5 dozen cookies?
5. Find the sum of 18, 7, 35, 16, and 9.
6. How many inches are there in $\frac{1}{3}$ of a foot?

Find the answers:

7. $996 \div 3 = ?$
8. $3 \times \$2.81 = ?$
9. $400 - 287 = ?$
10. $\$7.29 + \$3.98 = ?$

9 NEW DIVISION FACTS

1. How many 4's make 8? Then how many are $8 \div 4$? How many are $4\overline{)8}$? Mary says that there are two 4's in 8 because $2 \times 4 = 8$. Is she right?

2. How many 4's make 12? How many are $12 \div 4$? How many are $4\overline{)12}$?

3. How many 4's make 16? How many are $4\overline{)16}$?

Tell what numbers to put in place of the dots:

4. $5 \times 4 = 20$. So $4\overline{)20}$ equals . . .

5. $7 \times 4 = 28$. So $4\overline{)28}$ equals . . .

6. $8 \times 4 = 32$. So $4\overline{)32}$ equals . . .

7. $6 \times 4 = 24$. So $4\overline{)24}$ equals . . .

8. A division fact like the one at the right may be read "36 divided by 4 is 9" or "4 into 36 is 9."

$$4\overline{)36}\ 9$$

9. *Try to remember these new division facts:*

$$4\overline{)4}\ 1 \qquad 4\overline{)8}\ 2 \qquad 4\overline{)12}\ 3 \qquad 4\overline{)16}\ 4 \qquad 4\overline{)20}\ 5$$

$$4\overline{)24}\ 6 \qquad 4\overline{)28}\ 7 \qquad 4\overline{)32}\ 8 \qquad 4\overline{)36}\ 9$$

10. Apples cost 4¢ each. How many apples can you buy for 36¢? Think "how many 4's make 36?"

11. Mr. Lee sold 24 qt. of ice cream. 4 qt. = 1 gal. How many gallons do 24 qt. make?

LEARNING ABOUT $\frac{1}{4}$

1. When one thing, like an apple, is divided into 4 equal parts, each part is called *one fourth* or *one quarter* of the whole thing.

One fourth is written like this: $\frac{1}{4}$.

2. Which is larger, $\frac{1}{4}$ of an apple or $\frac{1}{2}$ of an apple?

3. Betty has 12 daisies. She divides them into 4 equal groups. Each group has *one fourth*, or $\frac{1}{4}$, of the whole number of daisies.

4. Count how many daisies Betty has in each group. Then divide 12 by 4. Is $\frac{1}{4}$ of 12 the same as $12 \div 4$?

To find $\frac{1}{4}$ of a number, divide it by 4.

5. Fred earned $24. He spent $\frac{1}{4}$ of it for a trip to the country. How much did the trip cost?

6. Alice has a piece of blue ribbon 20 in. long. She wants to cut it into 4 pieces so that all the pieces will be of the same length. How many inches long will each piece be? What is $\frac{1}{4}$ of 20 in.?

Find the following:

7. $\frac{1}{4}$ of 8	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 28 men
8. $\frac{1}{4}$ of 12	$\frac{1}{4}$ of 20	$\frac{1}{4}$ of 4 girls
9. $\frac{1}{4}$ of 16	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 36 cents

USING 4's IN PROBLEMS

1. Mother says that 4 cups of milk make 1 quart. She used 8 cups of milk in making some cocoa. How many quarts of milk did she use?

2. You have learned that 1 quart of milk will fill 4 glasses. How many quarts of milk will it take to fill 12 glasses? to fill 20 glasses? to fill 32 glasses? to fill 28 glasses? to fill 36 glasses?

3. Yesterday mother had 8 cookies. She divided them *equally* between Joe and Ted. When you divide cookies *equally* between 2 boys, each boy gets the *same number* of cookies. So each boy got $\frac{1}{2}$ of the cookies. How many cookies did each boy get?

4. To-day mother had 12 sugar cookies. She divided them *equally* among 4 little girls. How many cookies did each girl get?

5. Tom has 20 spools. He uses them to make wheels for toy wagons. If he puts 4 spools on each wagon, how many toy wagons can he make?

6. Mary Ann has 32 dolls' dishes. She divides them equally among 4 girls. How many dishes does she give to each girl?

Give the answers to each of these:

7. $4\overline{)12}$ $4\overline{)24}$ $4\overline{)16}$ $4\overline{)4}$ $\frac{1}{4}$ of 8 $\frac{1}{4}$ of 20

8. $4\overline{)36}$ $4\overline{)28}$ $4\overline{)32}$ $4\overline{)8}$ $\frac{1}{4}$ of 12 $\frac{1}{4}$ of 28

A PRESENT FOR MOTHER

1. Three children bought their mother a book for her birthday. The book cost 69¢. The children shared the cost equally. How much did each pay?

In this problem the children shared the 69¢ *equally*. This means that they divided the 69¢ *equally* among the 3 of them so that each child paid the same amount. *To share* means *to divide.*

You must divide 69¢ by 3 to find out how much each child paid. How much was it?

To check the work, multiply 23 by 3. Do you get 69? Is 23 the right answer?

$$3\overline{)69}$$
$$23$$

2. Mary, Peggy, Joe, and George bought their mother a box of chocolate candy for 84¢. If the 4 children shared the cost equally, what was each child's share of the cost?

If things are shared equally by several children, you find each child's share by dividing.

DIVIDING ZERO BY A NUMBER

1. If you divide 4¢ equally among 4 boys, each boy will get 4¢ ÷ 4, or 1¢.

2. You remember that 0 is read *zero* and means *not any;* hence 0¢ means *not any* cents, or *no* cents.

3. If you divide 0¢ among 4 boys, each boy will get 0¢ ÷ 4, or *no* cents. This shows that 0 ÷ 4 = 0.

4. 0 ÷ 4 = 0 may also be written thus: $\begin{array}{r} 0 \\ 4\overline{)0} \end{array}$

5. How much is 0 ÷ 3? $3\overline{)0}$? $2\overline{)0}$?

6. Remember that **0 divided by any number is 0.**

Using Zero in Division

1. Divide 306 by 3.

Think "3 ÷ 3 = 1." Write 1 over 3.
Think "0 ÷ 3 = 0." Write 0 over 0.
Think "6 ÷ 3 = 2." Write 2 over 6.
The quotient is 102.
To check, multiply 102 by 3.

$$\begin{array}{r} 102 \\ 3\overline{)306} \end{array}$$

Check

$$\begin{array}{r} 102 \\ \times\ 3 \\ \hline 306 \end{array}$$

2. Divide 140 by 2.

Think "14 ÷ 2 = 7." Write 7 over 4.
Think "0 ÷ 2 = 0." Write 0 over 0.

$$\begin{array}{r} 70 \\ 2\overline{)140} \end{array}$$

Divide the following. Check by multiplying:

3. $2\overline{)406}$	6. $3\overline{)606}$	9. $3\overline{)150}$	12. $2\overline{)204}$
4. $2\overline{)180}$	7. $3\overline{)690}$	10. $4\overline{)808}$	13. $4\overline{)440}$
5. $3\overline{)903}$	8. $2\overline{)600}$	11. $3\overline{)270}$	14. $2\overline{)804}$

PRACTICE IN DIVIDING

Divide. Check the work by multiplying:

1. $4\overline{)84}$	$2\overline{)800}$	$4\overline{)124}$	$3\overline{)303}$	$2\overline{)880}$
2. $4\overline{)40}$	$2\overline{)202}$	$4\overline{)200}$	$2\overline{)608}$	$3\overline{)360}$
3. $3\overline{)30}$	$4\overline{)240}$	$2\overline{)604}$	$3\overline{)120}$	$2\overline{)440}$
4. $2\overline{)40}$	$3\overline{)309}$	$4\overline{)844}$	$3\overline{)963}$	$2\overline{)206}$
5. $4\overline{)88}$	$4\overline{)168}$	$3\overline{)930}$	$4\overline{)128}$	$2\overline{)100}$
6. $2\overline{)22}$	$3\overline{)210}$	$4\overline{)404}$	$3\overline{)900}$	$4\overline{)888}$
7. $4\overline{)80}$	$4\overline{)360}$	$3\overline{)183}$	$4\overline{)368}$	$4\overline{)280}$
8. $2\overline{)80}$	$3\overline{)960}$	$4\overline{)160}$	$2\overline{)408}$	$3\overline{)240}$
9. $3\overline{)60}$	$2\overline{)860}$	$4\overline{)320}$	$2\overline{)660}$	$4\overline{)204}$
10. $4\overline{)48}$	$2\overline{)820}$	$4\overline{)884}$	$3\overline{)966}$	$2\overline{)400}$
11. $3\overline{)90}$	$4\overline{)208}$	$3\overline{)600}$	$2\overline{)602}$	$4\overline{)328}$
12. $2\overline{)60}$	$3\overline{)630}$	$4\overline{)840}$	$3\overline{)660}$	$4\overline{)804}$
13. $4\overline{)44}$	$2\overline{)140}$	$3\overline{)306}$	$2\overline{)806}$	$4\overline{)244}$
14. $2\overline{)64}$	$4\overline{)848}$	$4\overline{)444}$	$3\overline{)300}$	$2\overline{)280}$

PROBLEMS ABOUT SHARING

1. Uncle Tom had 128 picture post cards. He gave them to 4 boys and told the boys to share them equally. How many post cards did each boy get?

2. George says that in ex. 1 you must divide 128 by 4 because 4 boys share the post cards. Is George right? By what number would you divide if 2 boys share the cards?

3. If 3 boys share 120 post cards, by what number do you divide to find each boy's share? How many cards will each boy get?

4. Four boys rent a boat for one hour. It costs 40¢. What is each boy's share of the boat rent? Do you divide by 2, or by 3, or by 4, to find the answer? Tell why.

5. Mary and Betty paid 60¢ to play tennis on Saturday morning. They shared the cost equally. Mary divided 60 by 3 to find her share. Was that the right way to find Mary's share? What was her share? What was Betty's share?

To share equally means to divide equally.

When several children share things equally, like stamps or post cards, divide by the number of children to find each child's share.

When several children share equally the cost of something, divide the cost by the number of children to find each child's share.

A COOKIE SALE

1. The cooking class made cookies for a sale. They brought some of the things from home and bought the other things. They bought 4 dozen eggs at $.29 a dozen. How much did the eggs cost?

2. They also bought 3 quarts of milk at $.14 a quart. How much did they pay for it?

3. At 80¢ a pound, how much did they pay for ½ pound of nuts?

4. They made 84 cookies of each kind and there were 4 different kinds. How many cookies did they make in all?

5. Ann sold 3 dozen chocolate cookies at $.35 a dozen. How much did she get for them?

6. Betty sold 6 dozen sugar cookies at $.33 a dozen. How much did she get for them?

7. The girls made $9.30 at the sale. If they spent $3.25 of it to buy a new cook book for the class, how much did they have left?

PROBLEM TEST C1

1. Last year there were 185 school days. Ann did not go to school 18 days in the winter. How many days did Ann go to school last year?

2. Mary put 120 daisies in bunches. She put 4 daisies in each bunch. How many bunches of daisies did she make?

3. Three days last week Joe ate his lunch at school. He spent $.25 Monday, $.21 Wednesday, and $.26 Friday. How much did he spend for lunches?

4. Mr. Smith took all his family to the moving pictures. He paid $.35 each for 4 tickets. How much did the tickets cost him?

5. Mrs. Day paid 39¢ for 3 yards of ribbon. What was the cost of 1 yard?

6. Father has a new car that cost $795. Uncle Tom bought a new car this year for $900. What is the difference in the prices of the two cars?

7. Jack works in his father's store. Yesterday he put 48 cans of peaches on each of 3 shelves. How many cans did he put on the shelves?

8. Miss Lee saved $4.75 last week and $2.50 this week. How much did she save in the two weeks?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

Write down the number of problems you got right on this test. Try to do better on your next problem test.

MULTIPLYING 5's

1. Count by 5's to 50, beginning 5, 10, 15.

2. Add these columns. How many are three 5's? four 5's? five 5's? six 5's? How many are 3×5? 4×5? 5×5? 6×5?

			5
		5	5
	5	5	5
5	5	5	5
5	5	5	5
5	5	5	5
15	20	25	30

3. By adding columns of 5's, find how many seven 5's are; eight 5's; nine 5's. How many are 7×5? 8×5? 9×5?

4. If 1 glass of milk costs 5¢, how much will 2 glasses of milk cost? How much will 4 glasses cost? 6 glasses? 7 glasses? 9 glasses?

5. Mary is making paper flowers. It takes her 5 minutes to make each flower. How many minutes will it take her to make 3 flowers? to make 8 flowers? to make 9 flowers?

6. There are 5 cents in 1 nickel. How many cents are there in 2 nickels? in 4 nickels? in 5 nickels? in 8 nickels? in 9 nickels?

What numbers should be put where the dots are?

7. $5\times5 = \ldots$ $7\times5 = \ldots$ $1\times5 = \ldots$

8. $8\times5 = \ldots$ $4\times5 = \ldots$ $3\times5 = \ldots$

9. $2\times5 = \ldots$ $9\times5 = \ldots$ $6\times5 = \ldots$

SOME NEW MULTIPLICATION FACTS

1. Joe bought 3 apples at 5¢ each. How much did they cost? Fred bought 5 apples at 3¢ each. How much did Fred's apples cost? Does $3 \times 5 = 5 \times 3$? What do you call 3×5 and 5×3?

2. How many are 9×5? What is the reverse of 9×5? What does it equal?

Remember that reverses have the same answer.

3. Remember these multiplication facts. You already know the first 8 facts.

5	1	5	2	5	3	5	4	5
1	5	2	5	3	5	4	5	5
5	5	10	10	15	15	20	20	25

5	6	5	7	5	8	5	9	✦
6	5	7	5	8	5	9	5	
30	30	35	35	40	40	45	45	

4. Which of the facts above are reverses? What is the reverse of 7×5? of 5×5?

Multiply these numbers as quickly as you can:

5.	5	5	5	7	5	1	0	9	5
	9	2	8	5	3	5	5	5	4
6.	2	5	4	6	5	5	5	8	5
	5	7	5	5	5	0	6	5	0

SELLING ICE-CREAM CONES

1. At the school fair Ann sold 19 ice-cream cones at 5¢ each. How much did she get for all of them?

In this problem 5×19 gives the right answer, because 5×19 is the same as 19×5. When you multiply 19 by 5, what number do you have to carry?

2. Frank sold 25 ice-cream cones at 5¢ each. How much in all did he get for them?

3. At the fair 115 ice-cream cones were sold all together. At 5¢ each, how much money did the children take in from ice-cream cones?

Multiply. Check the work by going over it again:

4.	23	15¢	17¢	121	100	140
	5	5	5	5	5	5
5.	64	86¢	41¢	171	120	231
	5	5	5	5	5	5
6.	22	38¢	24¢	111	119	150
	5	5	5	5	5	5
7.	19	13¢	72¢	219	307	221
	5	5	5	5	5	5

PROBLEMS AND PRACTICE

1. It costs 5¢ to ride in the bus. This morning the bus carried 118 people in all on its trips. How much did the bus earn this morning?

Multiply 118 by 5 because 5×118 is the same as 118×5. Change the answer to dollars and cents.

2. It costs $1.15 for a child to ride on the train to Blue Lake. How much will it cost for 3 children? for 4 children? for 6 children?

Multiply. Check the work by going over it again:

3.	\$.25 × 7	\$.51 × 8	\$.35 × 6	\$.49 × 5	\$1.15 × 6	\$1.05 × 9
4.	\$.55 × 6	\$.27 × 5	\$.81 × 5	\$.33 × 5	\$1.80 × 5	\$2.60 × 5
5.	\$.50 × 7	\$.73 × 5	\$.15 × 7	\$.53 × 6	\$3.00 × 5	\$1.30 × 5
6.	\$.91 × 5	\$.51 × 9	\$.35 × 8	\$.51 × 6	\$2.50 × 5	\$1.70 × 5
7.	\$.45 × 7	\$.50 × 9	\$.69 × 5	\$.53 × 7	\$1.60 × 5	\$2.20 × 5
8.	\$.99 × 5	\$.32 × 5	\$.52 × 9	\$.53 × 5	\$1.15 × 5	\$2.15 × 5

REVIEW

Add the following and check the work:

1.	391 + 223	293 + 479	580 + 129	428 + 433	221 + 579	375 + 368
2.	430 + 270	379 + 549	494 + 168	279 + 121	378 + 518	483 + 458

Subtract the following and check the work:

3.	806 − 144	844 − 279	986 − 391	946 − 199	600 − 392	463 − 148
4.	700 − 385	864 − 375	829 − 496	975 − 586	470 − 323	763 − 556

Find the following. Check by going over the work:

5.	$\frac{1}{2}$ of 242	$\frac{1}{3}$ of 333	$\frac{1}{4}$ of 488	$\frac{1}{2}$ of 600
6.	$\frac{1}{3}$ of 663	$\frac{1}{4}$ of 164	$\frac{1}{2}$ of 424	$\frac{1}{3}$ of 633
7.	$\frac{1}{4}$ of 324	$\frac{1}{2}$ of 884	$\frac{1}{3}$ of 339	$\frac{1}{2}$ of 682
8.	$2\overline{)446}$	$4\overline{)804}$	$2\overline{)668}$	$4\overline{)800}$	$3\overline{)939}$
9.	$4\overline{)400}$	$3\overline{)936}$	$2\overline{)448}$	$2\overline{)246}$	$4\overline{)120}$
10.	$3\overline{)363}$	$2\overline{)864}$	$3\overline{)666}$	$2\overline{)828}$	$3\overline{)996}$

SAVING MONEY TO BUY A BICYCLE

1. Ted is saving his money to buy a bicycle. He has saved \$.65 each week for the last 5 weeks. How much money has he saved for the bicycle?

*2. Ted can buy an old bicycle for \$8.00. How much more money does he need to save to have \$8.00? See ex. 1.

*3. Ted says that if he can save \$.95 a week for 5 more weeks he will then have enough to buy the bicycle. Is Ted right?

*4. Ted can buy a new bicycle for \$20. How much does Ted save by buying the old bicycle?

Multiply. Check the work by going over it again:

5.	45 × 9	51 × 7	111 × 5	105 × 6	100 × 5	151 × 6
6.	53 × 8	55 × 9	131 × 5	115 × 6	105 × 9	141 × 5
7.	35 × 7	50 × 8	150 × 6	116 × 5	109 × 5	105 × 7
8.	25 × 9	15 × 6	140 × 5	105 × 8	112 × 5	181 × 5
9.	55 × 7	52 × 6	107 × 5	114 × 5	191 × 5	110 × 5

9 NEW DIVISION FACTS

1. How many 5's make 25? How many are $25 \div 5$? How many are $5\overline{)25}$?

2. John bought a ball for 25¢ and paid for it in nickels. How many nickels did he give? How many nickels make 15¢? 20¢? 35¢? 45¢?

3. How many 5's make 40? How many are $5\overline{)40}$?

4. How many 5's make 30? How many are $5\overline{)30}$?

5. Try to remember these new division facts:

$5\overline{)5}$ $\quad 5\overline{)10}$ $\quad 5\overline{)15}$ $\quad 5\overline{)20}$ $\quad 5\overline{)25}$

$5\overline{)30}$ $\quad 5\overline{)35}$ $\quad 5\overline{)40}$ $\quad 5\overline{)45}$

6. Joe has 30 pennies. He wants to have them changed to nickels. How many nickels will he get for them? How many 5's are there in 30?

7. How many nickels will you get for 20 pennies? for 35 pennies? for 45 pennies?

8. At 5¢ each, how many pencils can you buy for 15¢? for 25¢? for 30¢? for 40¢? for 45¢?

Tell what numbers to put in place of the dots:

9. $45 \div 5 = \ldots$ $\quad 40 \div 5 = \ldots$ $\quad 5 \div 5 = \ldots$

10. $30 \div 5 = \ldots$ $\quad 20 \div 5 = \ldots$ $\quad 15 \div 5 = \ldots$

11. $10 \div 5 = \ldots$ $\quad 35 \div 5 = \ldots$ $\quad 25 \div 5 = \ldots$

LEARNING ABOUT $\frac{1}{5}$

1. Ann's mother cut a pie into 5 equal pieces. Each piece was *one fifth* of the whole pie.

When we divide *one thing*, like a pie, into 5 equal parts, each part is *one fifth* of the whole.

We write one fifth like this: $\frac{1}{5}$.

2. Grandfather divided 10 dimes equally among 5 girls. How many dimes did each girl get?

When a *group of things*, like 10 dimes, is divided into 5 equal parts, each part is also called *one fifth* of the whole.

3. How many are $\frac{1}{5}$ of 10 dimes? Is $\frac{1}{5}$ of 10 the same as $10 \div 5$?

To find $\frac{1}{5}$ of a number, divide it by 5.

4. Five boys worked together in a garden. They earned 45¢ all together, which they divided equally. How many cents did each boy get?

5. Divide 30¢ equally among 5 boys. Divide 20¢ among them. Divide 40¢ among them.

6. How much is $\frac{1}{4}$ of 40¢? How much is $\frac{1}{5}$ of 40¢? Which is larger, $\frac{1}{4}$ of 40¢ or $\frac{1}{5}$ of 40¢?

7. Which is larger, $\frac{1}{5}$ of a pie or $\frac{1}{4}$ of a pie?

8. What is $\frac{1}{5}$ of \$30? $\frac{1}{3}$ of \$30? $\frac{1}{2}$ of \$30? Which of these is the largest? Which is the smallest?

9. Find $\frac{1}{5}$ of 25 boys; of 45 books; of \$35.

USING 5's IN PROBLEMS

1. George gets 5¢ each time he runs an errand. He wants to buy a cap that costs 40¢. How many errands will he have to run to earn 40¢?

2. Alice has a quarter and a dime. How many cents is that? She wants to change it all into nickels. How many nickels will she get?

3. Balloons cost 5¢ each. How many balloons can you buy for 15¢? for 25¢? for 40¢?

Give the answers to each of these:

4.	$5\overline{)20}$	$5\overline{)10}$	$5\overline{)5}$	$\frac{1}{5}$ of 40	$\frac{1}{5}$ of 5
5.	$5\overline{)35}$	$5\overline{)25}$	$5\overline{)30}$	$\frac{1}{5}$ of 15	$\frac{1}{5}$ of 30
6.	$5\overline{)15}$	$5\overline{)40}$	$5\overline{)45}$	$\frac{1}{5}$ of 20	$\frac{1}{5}$ of 35

7. Mother gives 20¢ in all to Mary, Joe, Peggy, Fred, and Ann. She tells them to divide it equally among them. How much does each one get?

8. There are 35 children in our third grade at school. $\frac{1}{5}$ of the children got a mark of 100 on the arithmetic test. How many children got 100?

9. How many nickels will you get for 50 pennies? How many 5's are there in 50? How many nickels make a half dollar?

$$5\overline{)50}\quad 10$$

10. Five boys rent a boat for 35¢ to go fishing. The boys share the cost equally. How much is each boy's share? Is $\frac{1}{5}$ of 45 the same as $45 \div 5$?

PROBLEMS AND PRACTICE

1. Alice has 55¢. How many yards of blue ribbon can she buy with it at 5¢ a yard?

2. How many cents are there in one dollar? If you get a dollar changed into nickels, how many nickels will you get for it?

3. Bobby grows carrots in his garden. When he sells the carrots, he puts 5 carrots in each bunch. How many bunches can he get from 150 carrots? from 200 carrots? from 250 carrots?

4. Bobby sold his carrots at 5¢ a bunch. How much did he get for 15 bunches of carrots?

5. Wednesday afternoon Bobby took in 45¢ selling carrots at 5¢ a bunch. How many bunches of carrots did he sell that afternoon?

Divide. Check the work by multiplying:

6.	$5\overline{)35}$	$5\overline{)155}$	$5\overline{)400}$	$5\overline{)505}$	$5\overline{)450}$
7.	$5\overline{)50}$	$5\overline{)350}$	$5\overline{)305}$	$5\overline{)555}$	$5\overline{)300}$
8.	$5\overline{)55}$	$5\overline{)255}$	$5\overline{)105}$	$5\overline{)355}$	$5\overline{)455}$
9.	$5\overline{)40}$	$5\overline{)500}$	$5\overline{)405}$	$5\overline{)550}$	$5\overline{)205}$

10. Find $\frac{1}{5}$ of 350; $\frac{1}{5}$ of 250; $\frac{1}{5}$ of 150.

11. Which is more, $\frac{1}{4}$ of 200 or $\frac{1}{5}$ of 200?

FUN AT PLAYLAND

1. On his birthday Bobby asked 3 boys to go with him to Playland. Each ticket cost 35¢. How much did Bobby pay for 4 tickets?

2. In Playland the toy balloons are tied to the top of a tall pole. When you give the clown 5¢, he climbs the pole and gets you a balloon. The boys saw him bring down 14 balloons in all. The clown got . . .¢ for them.

*3. Bobby bought 4 balloons at 5¢ each. If he gave the clown 50¢, how much change did he get?

4. Each time that you can ring the bell when you ride on the Humpty-Dumpty Road, you get 2 free rides. The boys rang the bell 38 times. How many free rides did they get?

5. The boys found the way into the Robber's Cave. The prize was a box with 80 pieces of candy in it. They divided the candy equally and each of the 4 boys got . . . pieces.

6. At Playland the boys saw a play called Jack-the-Giant-Killer. Bobby paid 40¢ for 4 tickets. How much did 1 ticket cost?

PROBLEMS WITHOUT NUMBERS

Tell whether you would add, subtract, multiply, or divide to get the answer:

1. If you know how much money you had in your bank and also how much money you put in to-day, how do you find how much you have all together?

2. If you know how much you paid for several white mice, how can you find the cost of one?

3. If you know how much money you had when you went to the circus and how much you had left when you got home, how do you find how much money you spent?

4. If you know the cost of one pencil and the number of pencils you want to buy, how do you find the cost of all of them?

MIXED PRACTICE

Find the answers:

1. 6 feet = . . . inches
2. 40 pints = . . . quarts
3. $\frac{1}{2}$ foot = . . . inches
4. 14 yards = . . . feet

Subtract	*Multiply*	*Add*	*Divide*
5. \$8.50 − 6.75	6. 109 × 5	7. 864 + 136	8. $5\overline{)255}$

9. Write in Roman numerals: 15, 22, 29.
10. Write in columns and add: 785, 892, 136.
11. Find $\frac{1}{3}$ of 186.
12. Find one fourth of 484.

PROBLEM TEST C2

1. Jim bought a suit for \$8.75, a sweater for \$3.25, and a cap for \$.85. How much did these things cost?

2. Our class is selling chocolate bars. There are 24 bars in each box. If Fred sold 5 boxes of chocolate bars, how many bars did he sell in all?

3. We sold 472 tickets to the school baseball game yesterday. If 297 tickets were sold to pupils of the school, how many tickets were sold to others?

4. Mrs. Adams paid 48¢ for 4 quarts of milk. How much did 1 quart cost?

5. We need 5 quarts of ice cream for a party. How much will the 5 quarts cost if 1 quart costs \$.65?

6. Uncle Ed picked 284 quarts of apples yesterday. He put them in baskets holding 4 quarts each. How many baskets of apples did he have?

7. Some boys went fishing. Joe caught 6 fish, Jim caught 3 fish, Billy caught 8, and Jack did not get any. How many fish did they get all together?

8. Jane weighs 59 pounds and I weigh 66 pounds. What is the difference in our weights?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

This test is like Test C1 on page 228. Unless you had all the problems right on Test C1, you should do better this time. Keep your mark on this test.

HOW TO TELL TIME

1. The long hand on a clock is the *minute hand* and the short hand is the *hour hand*. On this clock the hour hand points to 7 and the minute hand to 12. It is 7 o'clock.

2. The little marks on the edge of the clock show minutes. How many minutes are there between 12 and 1? between 1 and 2? between 3 and 4?

3. You see that the spaces between the numbers on the clock each show 5 minutes. Beginning at 1, point to each number on the clock and count the minutes by 5's. How many minutes make 1 hour?

4. When the long hand points to 1, as in *A*, it is 5 *minutes past* 7, or 7:05. When it points to 2, as in *B*, it is 10 *minutes past* 7, or 7:10. An easy way to find the number of minutes when the long hand points to 2, is to think "2×5 = 10." When the long hand points to 3, as in *C*, think "3×5 = 15." Clock *C* reads 15 *minutes past* 7, or 7:15.

A. 7:05

B. 7:10

C. 7:15

5. How many minutes after the hour is it when the long hand points to 5? to 6? to 8?

HOW TO TELL TIME

1. Tell the time by each of these clocks:

2. The first clock below shows 5:50. You often call this 10 *minutes before* 6, or 10 *minutes to* 6. Tell the time in two ways on each of the other clocks.

3. Remember this table of *time*:

60 minutes (min.) = 1 hour (hr.)
24 hours (hr.) = 1 day (da.)

Tell how the long hand of the clock points at each of these times. Min. means minutes:

4. 5 o'clock
5. 20 min. after 6
6. 35 min. after 8
7. 10 min. after 12
8. 40 min. after 4
9. 10 min. before 11
10. 20 min. before 7
11. 25 min. before 3
12. 5 min. before 1
13. 15 min. before 8

HALF HOURS AND QUARTER HOURS

1. Find $\frac{1}{2}$ of 60 min. If 60 minutes make 1 hour, how many minutes make $\frac{1}{2}$ hour?

2. When the time is 30 min. after 2, or 2 : 30, you call it *half past* 2. This means a half hour after 2. What kind of numbers has this clock?

3. In a half hour does the long hand of the clock move all around the face of the clock, or half way around?

4. At half past 3, does the hour hand point to 3, or to 4, or half way between 3 and 4?

5. Multiply 15 by 4. If four 15's make 60, what is $\frac{1}{4}$ of 60? How many minutes are $\frac{1}{4}$ of 60 min.? How many minutes are there in $\frac{1}{4}$ of an hour?

$\frac{1}{4}$ hr. = 15 min. **$\frac{1}{2}$ hr. = 30 min.**

6. When the time is 15 min. after 8, or 8 : 15, you call it *a quarter after* 8. When the time is 15 min. before 11, you call it *a quarter to* 11.

7. In $\frac{1}{4}$ hr. does the long hand move all around the face of the clock, or half way around, or a quarter of the way around?

8. Noon comes at 12 o'clock. A.M. written after the time means *before noon;* P.M. means *after noon*

★FRED'S GARDEN

1. Last spring Fred made a garden. He had $3.00 and spent $1.65 for seeds. How much money did he have left?

2. He saw a rake that cost $.89. He wanted to buy it. Did he have enough money to buy the rake? Did he have any money left after buying the rake?

3. In the summer Fred sold 158 bunches of carrots, 96 bunches of radishes, and 133 bunches of beets. How many bunches of vegetables did Fred sell all together?

4. One day Fred had 100 beets to tie in bunches. He put 5 beets in each bunch. How many bunches of beets did he tie that day?

5. Fred's aunt bought some of his vegetables last summer. She bought 76 bunches of carrots, 26 bunches of radishes, and 47 bunches of beets. How many bunches of vegetables did she buy?

6. Fred grew 29 heads of cabbage and 87 heads of lettuce. How many more heads of lettuce than of cabbage did he have?

7. Fred sold 67 heads of lettuce at 5¢ a head. How much did he get for all these heads of lettuce?

8. Fred had the best boy's garden and won a prize of $5.00. He spent $4.50 of it for an old bicycle. How much did he have left after buying the bicycle?

REVIEW

Multiply. Check the work by going over it again:

1.	47 × 2	83 × 3	63 × 4	71 × 3	36 × 2	41 × 5
2.	42 × 4	89 × 2	26 × 3	52 × 2	81 × 4	54 × 3
3.	129 × 3	172 × 4	112 × 5	118 × 5	192 × 4	217 × 4
4.	193 × 2	123 × 4	184 × 2	319 × 3	114 × 5	181 × 4
5.	224 × 3	191 × 4	107 × 5	115 × 5	318 × 3	264 × 2
6.	182 × 4	106 × 3	160 × 5	383 × 2	215 × 4	119 × 5
7.	304 × 5	700 × 2	408 × 3	210 × 5	105 × 3	905 × 2
8.	207 × 3	804 × 5	170 × 5	405 × 4	230 × 5	115 × 4
9.	105 × 6	117 × 3	112 × 8	327 × 2	111 × 7	216 × 4

DIAGNOSTIC TEST

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Add the following and check the work:

							HELP PAGES
1.	64 38 14 82	96 15 44 47	28 84 33 28	59 62 90 46	66 41 16 58	45 30 77 81	67, 68 141, 152
2.	125 317	178 561	362 493	432 318	154 755		73, 76
3.	198 153	776 177	378 234	279 367	598 289		157, 159
4.	586 320	84 416	408 308	697 200	235 65		79, 160

Subtract the following and check the work:

5.	143 55	175 79	416 234	392 224	945 592	99–101 103
6.	943 379	651 472	262 177	833 654	715 466	167, 168
7.	600 252	702 638	803 408	600 105	504 74	104, 169

DIAGNOSTIC TEST

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Multiply these numbers:

								HELP PAGES
1.	4	5	7	8	5	5	7	210, 230
	9	4	5	4	8	5	4	

Multiply and check the work:

2.	59	43	83	44	140	215, 216
	4	7	4	6	9	
3.	56	55	54	181	230	231, 234
	5	8	7	5	5	
4.	\$.84	\$.79	\$.28	\$1.41	\$1.50	215, 216, 232
	4	5	5	7	6	

Divide these numbers:

5.	$4\overline{)32}$	$4\overline{)24}$	$5\overline{)30}$	$5\overline{)45}$	220, 235
6.	$2\overline{)800}$	$4\overline{)488}$	$3\overline{)906}$	$4\overline{)200}$	224, 225
7.	$5\overline{)150}$	$5\overline{)55}$	$5\overline{)455}$	$5\overline{)100}$	230

Give the answers to the following:

8.	$\frac{1}{4}$ of 84	$\frac{1}{5}$ of 255	$\frac{1}{4}$ of 368	221, 230

CHAPTER VIII

USING WHAT YOU HAVE LEARNED

PICTURES FOR SALE

1. The third grade children are selling pictures they have made. Count the pictures on the wall.

2. They want 10¢ each for the 2 small pictures at the right end of the wall. They want 15¢ each for the other pictures on the wall. How much will they get for all the pictures on the wall?

3. Peggy thinks they should ask 15¢ each for the 2 small pictures and 25¢ each for the others. If they did that, how much in all would they get?

TESTING YOUR SKILL IN ADDITION

When you count by 2's, 3's, 4's, and 5's you use addings by endings. This counting helps you to add columns like those on page 251.

1. Count by 2's to 20. Beginning with 1, count by 2's to 21 like this: 1, 3, 5, and so on.

2. Count by 3's to 30. Beginning with 1, count by 3's to 31 like this: 1, 4, 7, and so on. Beginning with 2, count by 3's to 32.

3. Count by 4's to 40. Beginning with 1, count by 4's to 41 like this: 1, 5, 9, and so on. Beginning with 2, count by 4's to 42 like this: 2, 6, 10, and so on. Beginning with 3, count by 4's to 43.

4. Count by 5's to 50. Beginning with 1, count by 5's to 51. Beginning with 2, count by 5's to 52. Beginning with 3, count by 5's to 53. Beginning with 4, count by 5's to 54.

5. Try to give the answers orally to all the addition facts on page 32 in 3 minutes. If you miss any facts, write them on cards and study them carefully as shown on page 33.

6. What is the *reverse* of $5 + 9$? If you forget the answer to $5 + 9$, how does its reverse help you?

7. $8 + 8 = 16$. Then how many are $8 + 9$? $9 + 8$?

8. $6 + 6 = 12$. Then how many are $6 + 7$? $7 + 6$?

9. $7 + 7 = 14$. Then how many are $7 + 8$? $8 + 7$?

10. $9 + 9 = 18$. Then how many are $9 + 8$? $8 + 9$?

PRACTICE IN ADDING

Add the following and check the work:

1.	36	83	34	85	36	65	97
	52	35	41	30	74	51	27
	45	85	93	26	25	47	61
	34	27	76	59	43	38	63
2.	43	24	41	87	91	42	70
	64	72	98	62	97	60	53
	26	89	40	48	17	19	30
	35	59	26	73	12	64	79
3.	23	31	90	65	23	23	90
	91	65	44	13	30	27	16
	85	14	51	68	43	72	74
	20	78	57	30	88	25	43
	54	31	58	27	29	59	22

4.	\$7.16	\$1.89	\$6.75	\$4.42	\$3.45
	2.68	1.74	2.25	1.42	4.81
5.	\$5.99	\$3.70	\$1.96	\$4.05	\$5.59
	2.12	3.07	5.26	4.13	6.68
	1.51	1.05	1.31	2.32	1.31
6.	\$3.29	\$4.80	\$4.93	\$1.27	\$2.79
	1.90	1.07	4.52	5.98	8.06
	1.04	2.62	5.55	2.73	4.66

TESTING YOUR SKILL IN SUBTRACTION

1. Try to give the answers orally to all the subtraction facts on page 39 in 3 minutes.

2. If you forget the answer to 13 − 9, think "9 and what are 13?" Then how many are 13 − 9?

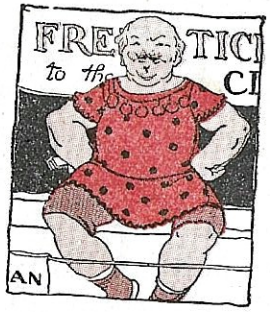
3. How do you think if you forget the answer to 17 − 8? if you forget the answer to 15 − 7?

4. How many are 11 less 5? How much more than 9 is 15? How many are 8 from 16?

Subtract. Check the work by adding:

5.	\$7.05 4.79	\$8.00 1.25	\$6.45 2.37	\$6.46 2.47	\$9.05 4.65
6.	\$8.42 3.65	\$5.30 1.32	\$8.88 3.15	\$7.96 3.18	\$9.00 3.87
7.	\$7.17 3.69	\$4.13 1.36	\$6.29 3.43	\$7.55 1.08	\$5.17 3.18
8.	\$7.16 1.35	\$9.23 5.88	\$5.00 2.31	\$3.94 2.69	\$4.22 2.73
9.	\$7.00 5.70	\$8.82 6.86	\$9.36 7.49	\$6.28 2.76	\$8.16 2.56
10.	\$9.13 3.77	\$6.74 5.21	\$3.74 1.68	\$7.13 3.59	\$5.51 1.59

*FREE TICKETS TO THE CIRCUS



1. Look at the picture and guess how much the fat man weighs. Then find the difference between your guess and the fat man's weight. If the difference is 10 pounds or less, you get a free ticket to the circus. If the difference is from 11 to 20 pounds, you get a ticket at half price. If the difference is more than 20 pounds, you get nothing. The fat man's right weight is 428 pounds.

2. Here are the guesses of some other children. Find the difference between each guess and the right weight of the fat man.

Bobby, 390	Alice, 300	Ann, 325
Betty, 410	Dick, 425	John, 350
Frank, 275	Jane, 290	Billy, 375
Helen, 480	Fred, 448	Mary, 435

3. Which children get free tickets to the circus?

4. Which children get tickets at half price?

5. Which children get nothing? Tell why.

6. Which children guessed too little? too much?

7. Fill a glass with beans and guess how many beans there are in it. Ask your friends to guess too. Then count the beans and find the difference between each guess and the right number of beans.

PROBLEM TEST C3

1. A quart of milk fills 4 glasses. How many quarts of milk are needed to fill 48 glasses?

2. Jack has 370 stamps and Ted has 345 stamps. What is the difference between the number of stamps Jack has and the number Ted has?

3. Dick is trying to save $3.50 a month so that he can buy a bicycle next summer. How much will he have at the end of 5 months?

4. Mary went to camp for a week last summer. She spent $8.75 to stay at camp, $2.17 to go to camp by train, and $1.65 to go home by bus. How much did Mary pay in all?

5. Bob works in a store. He sold Mrs. Lee sugar for $.30, butter for $.49, and eggs for $.38. How much did Mrs. Lee pay for these things?

6. There were 847 people who came to see the school play. Yesterday 391 people came and the rest came to-day. How many came to-day?

7. How many 5-cent pencils can I buy for 55¢?

8. Ed bought 4 pads, each holding 75 sheets of paper. How many sheets of paper did he get?

Standards	Excellent	Good	Fair	Poor
	7 or 8	5 or 6	4	0 to 3

This test is like Tests C1 and C2, pages 228 and 241. You should have all the problems right on this test.

MULTIPLICATION FACTS THROUGH 5's

You have learned these multiplication facts. Try to say the answers to all these facts in 3 minutes.

1.	5 × 5	0 × 4	8 × 0	6 × 3	5 × 2	2 × 9	8 × 4	5 × 9	3 × 0
2.	9 × 4	6 × 2	0 × 9	4 × 4	3 × 8	2 × 2	3 × 5	9 × 1	3 × 7
3.	5 × 1	4 × 2	6 × 4	7 × 3	9 × 5	1 × 4	2 × 8	3 × 3	0 × 8
4.	7 × 4	0 × 6	3 × 1	0 × 0	2 × 7	1 × 8	6 × 5	6 × 1	1 × 0
5.	4 × 8	7 × 5	9 × 2	2 × 3	0 × 2	5 × 8	1 × 7	9 × 3	4 × 7
6.	5 × 0	3 × 6	2 × 4	1 × 6	4 × 5	0 × 1	4 × 3	1 × 1	2 × 0
7.	4 × 1	2 × 5	4 × 0	5 × 6	8 × 2	7 × 1	1 × 3	2 × 6	8 × 5
8.	4 × 9	3 × 2	8 × 3	7 × 0	1 × 2	3 × 9	0 × 5	8 × 1	5 × 3
9.	5 × 4	0 × 3	1 × 5	3 × 4	5 × 7	4 × 6	7 × 2	1 × 9	2 × 1

PRACTICE IN MULTIPLICATION

1. If you miss any of the multiplication facts on page 255, write the ones you miss on cards as shown on page 33. Then study them carefully.

2. What is the reverse of 5×9? If you forget the answer to 5×9, how does the reverse help you?

3. $7 \times 3 = 21$. What does 3×7 equal?

4. How many 5's make 25? 35? 40? 30?

Multiply. Check the work by going over it again:

5.	56 × 2	38 × 4	47 × 3	440 × 2	101 × 5	432 × 2
6.	15 × 9	39 × 5	32 × 6	303 × 3	190 × 5	112 × 4
7.	58 × 4	40 × 7	87 × 5	110 × 9	406 × 2	104 × 8
8.	35 × 5	89 × 2	53 × 6	130 × 4	121 × 7	224 × 3
9.	65 × 3	25 × 6	43 × 2	114 × 5	140 × 3	203 × 4
10.	52 × 7	82 × 3	24 × 5	318 × 3	111 × 8	408 × 2

DO YOU LIKE TO READ?

1. Ted is reading a book that has 64 pages. He has read $\frac{1}{2}$ of the book. How many pages has he read? How many more pages has he to read?

2. Ted has 2 other books near the window. Each of them has 128 pages. If Ted reads both these books, how many pages will he read?

3. The book that Ted is reading cost \$.85. Ted paid \$.25 of the cost and his mother paid the rest. How much did his mother pay?

4. Helen is sitting in the chair. Her book has 96 pages. $\frac{1}{3}$ of the pages are picture pages. How many picture pages are there?

5. The rest of the pages in Helen's book have stories on them. How many story pages are there?

6. When Helen bought her book she gave the clerk a dollar and he gave her 25¢ change. How much did Helen's book cost?

HELPS IN PROBLEM SOLVING

1. If 1 spelling book costs $.57, how much will it cost to buy 3 spelling books?

2. Peggy gave Ann 3 boxes of candy. Each box had 24 pieces of candy in it. How many pieces of candy did Ann get all together?

3. One pencil costs 5¢. How much will it cost to buy 5 pencils? to buy 7 pencils? 9 pencils?

4. On one page in Joe's stamp book there are 5 rows of stamps with 6 stamps in each row. How many stamps in all are there on that page?

5. One pair of shoes costs $3.15. How much will 2 pairs cost? How much will 3 pairs cost?

6. The children saw a parade to-day. The men marched in rows. There were 8 men in each row. How many men were there in 4 rows? in 5 rows?

7. It costs 15¢ for a ticket to the moving pictures. How much will it cost if you buy 3 tickets? if you buy 5 tickets? 6 tickets?

8. To-day Billy worked 5 rows of examples in multiplication. There were 6 examples in each row. How many examples in all did Billy work to-day?

If you know the cost of 1 thing, you multiply to find the cost of several things of the same kind.

If you know the number of things in 1 row or in 1 box, you multiply to find the number of things in several rows or in several boxes.

CARRYING TWICE IN MULTIPLICATION

1. A moving picture is to be shown 3 times at our school to-morrow. There is room for 247 pupils to see the picture each time. How many pupils in all can see the picture?

You must multiply 247 by 3. In working this problem you have to carry twice.

Think "3 × 7 = 21." Write 1 and remember 2 to be carried.

Then think "3 × 4 = 12. 12 + 2(carried) = 14." Write 4 and remember 1 to be carried.

Think "3 × 2 = 6. 6 + 1(carried) = 7." Write 7.

The answer is 741. So 741 pupils can see the picture.

How do you check the work to make sure that it is right?

$$\begin{array}{r} 247 \\ \times\ 3 \\ \hline 741 \end{array}$$

2. An airplane travels 175 miles an hour. How many miles will it go in 3 hours? in 4 hours?

Multiply. Check the work by going over it again:

3.	$\begin{array}{r}389\\ \times\ 2\\ \hline\end{array}$	$\begin{array}{r}237\\ \times\ 4\\ \hline\end{array}$	$\begin{array}{r}164\\ \times\ 3\\ \hline\end{array}$	$\begin{array}{r}175\\ \times\ 2\\ \hline\end{array}$	$\begin{array}{r}122\\ \times\ 5\\ \hline\end{array}$	$\begin{array}{r}245\\ \times\ 3\\ \hline\end{array}$
4.	$\begin{array}{r}174\\ \times\ 4\\ \hline\end{array}$	$\begin{array}{r}348\\ \times\ 3\\ \hline\end{array}$	$\begin{array}{r}478\\ \times\ 2\\ \hline\end{array}$	$\begin{array}{r}135\\ \times\ 5\\ \hline\end{array}$	$\begin{array}{r}137\\ \times\ 4\\ \hline\end{array}$	$\begin{array}{r}296\\ \times\ 2\\ \hline\end{array}$
5.	$\begin{array}{r}134\\ \times\ 6\\ \hline\end{array}$	$\begin{array}{r}226\\ \times\ 4\\ \hline\end{array}$	$\begin{array}{r}497\\ \times\ 2\\ \hline\end{array}$	$\begin{array}{r}313\\ \times\ 9\\ \hline\end{array}$	$\begin{array}{r}194\\ \times\ 3\\ \hline\end{array}$	$\begin{array}{r}132\\ \times\ 7\\ \hline\end{array}$
6.	$\begin{array}{r}465\\ \times\ 2\\ \hline\end{array}$	$\begin{array}{r}112\\ \times\ 9\\ \hline\end{array}$	$\begin{array}{r}257\\ \times\ 3\\ \hline\end{array}$	$\begin{array}{r}153\\ \times\ 4\\ \hline\end{array}$	$\begin{array}{r}144\\ \times\ 6\\ \hline\end{array}$	$\begin{array}{r}152\\ \times\ 5\\ \hline\end{array}$

DELIVERING NEWSPAPERS

1. Ned delivers newspapers every day after school. He delivers 132 papers each week. How many papers does he deliver in 5 weeks?

2. George delivers 144 newspapers each week. How many papers all together does he deliver in 3 weeks? in 5 weeks?

3. How many papers a week do both boys deliver? How many papers do both boys deliver in 2 weeks?

Multiply. Check the work by going over it again:

4.	255 × 3	246 × 3	157 × 2	289 × 2	123 × 6	153 × 5
5.	143 × 5	344 × 4	213 × 8	124 × 5	359 × 2	234 × 3
6.	124 × 7	133 × 5	456 × 2	132 × 8	163 × 4	258 × 3

CARRYING TWICE IN MULTIPLICATION

Multiply. Check the work by going over it again:

1.	176 × 3	154 × 4	186 × 2	158 × 3	124 × 6	123 × 5
2.	134 × 7	132 × 5	235 × 3	113 × 9	133 × 4	275 × 2
3.	132 × 6	397 × 2	244 × 3	154 × 5	234 × 4	123 × 8
4.	145 × 5	337 × 3	165 × 4	477 × 2	123 × 7	288 × 2
5.	227 × 4	133 × 8	125 × 5	266 × 2	254 × 3	143 × 6
6.	134 × 5	179 × 2	142 × 7	248 × 3	224 × 4	212 × 9
7.	334 × 3	122 × 8	278 × 2	142 × 5	238 × 3	345 × 4
8.	155 × 5	173 × 4	495 × 2	144 × 5	365 × 2	312 × 9
9.	122 × 7	157 × 3	212 × 9	122 × 6	236 × 4	479 × 2

MIXED PRACTICE

1. Add these numbers: 642, 173, and 159.
2. Find the difference between 750 and 609.
3. What is the sum of \$2.38, \$3.65, and \$.92?
4. How many cents are there in 3 quarters?
5. How many inches are there in 1 ft. 3 in.?
6. Which is more, 6 in. of ribbon or $\frac{1}{2}$ yd. of ribbon?
7. 129 less 83 is what?
8. 49 plus 72 is what?

Divide	*Subtract*	*Add*	*Multiply*
9. $3\overline{)693}$	10. 800 − 492	11. \$8.75 + 3.06	12. 318 × 2

CAN YOU TELL THE MISSING WORD?

1. When you want to find the sum of two numbers, you . . . . . .
2. When you want to find how many 5's there are in 35, you . . . . . .
3. When you want to find the difference between two numbers, you . . . . . .
4. When you know the cost of 1 pencil, you . . . . . to find the cost of 4 pencils.
5. When you find one third of a number, you . . . . .
6. When you find how much larger one number is than another, you . . . . . .

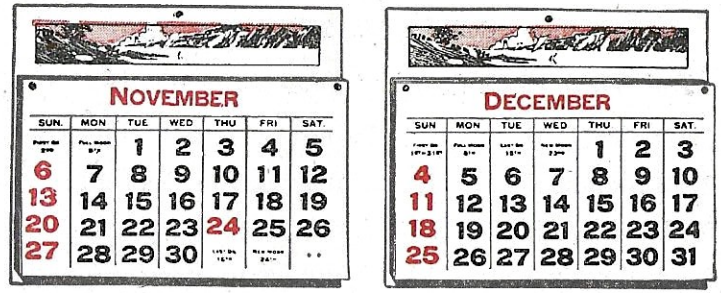
COUNTING MONEY

How many cents in all do these coins equal?

1. 2 dimes
2. 3 nickels
3. 2 quarters
4. 5 nickels
5. 3 quarters
6. 5 dimes
7. 4 quarters
8. 4 dimes
9. 2 half dollars
10. 7 nickels
11. 1 quarter and 1 dime
12. 1 quarter and 1 nickel
13. 2 nickels and 1 dime
14. 3 nickels and 1 dime
15. 1 quarter and 2 nickels
16. 3 quarters and 1 nickel
17. 2 nickels and 3 dimes
18. 1 quarter and 2 dimes
19. 1 half dollar and 1 quarter
20. 1 half dollar and 2 quarters

Tell what numbers should be put where the dots are:

21. 15 cents = . . . dime and . . . nickel.
22. 35 cents = . . . quarter and . . . dime.
23. 35 cents = . . . dimes and 1 nickel.
24. 20 cents = . . . dime and 2 nickels.
25. 1 quarter = . . . dimes and 1 nickel.
26. 1 quarter = . . . dime and 3 nickels.
27. 1 quarter = . . . dimes and . . . pennies.
28. 1 half dollar = 4 dimes and . . . nickels.
29. 1 half dollar = 1 quarter and . . . nickels.
30. 75 cents = . . . half dollar and . . . quarter.



NOVEMBER

SUN.	MON	TUE	WED	THU	FRI	SAT.
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

DECEMBER

SUN	MON	TUE	WED	THU	FRI	SAT.
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

READING THE CALENDAR

1. What words do Sun., Mon., Tue., Wed., Thu., Fri., and Sat. stand for on the calendar?

2. The date of the first day in November is read *November one* or *November first.* The date of the last day in November is *November thirty* or *November thirtieth.* Read in two ways the date of the first Saturday in November; of the last Saturday in November; of the second Saturday in December.

3. Read in two ways the date of Christmas Day; of Thanksgiving Day; of New Year's Day.

4. Look at the calendar above. On what day of the week does each of these dates come?

December 6	Christmas Day
November 10	November thirteenth
December 12	December sixteenth

5. What do you call the day that comes on July 4? on February 14? on February 22? on May 30? On what days of the week do these dates come this year?

DAYS, WEEKS, AND MONTHS

1. How many days are there in 1 week? in 2 weeks? in 3 weeks? in 4 weeks?

2. In the calendar on page 264 on what date does the first Tuesday in November come? the second Tuesday? the third Tuesday?

3. When you know the date of the first Sunday in November, how can you tell the dates of the other Sundays in that month without looking at the calendar?

4. The first Saturday in December is December 3. Without looking at the calendar, tell the dates for the second, third, and fourth Saturdays.

5. Count by 7's from 0 to 28; from 1 to 29; from 2 to 30; from 3 to 31; from 4 to 25; from 5 to 26.

6. Library books may be taken home for 2 weeks. On what date must you take a book back to the library if you take it out on May 3? on June 9?

7. Name all the months of the year.

8. Look at this year's calendar and tell how many days there are in each month.

9. Does any month have just 4 weeks? If so, what month is it?

10. How many days are there in 5 weeks? Does any month have 5 weeks?

11. What are the longest months? How many days are there in each of these months?

THE FOUR SEASONS

1. There are four seasons each year. The seasons are called spring, summer, fall, and winter. There are 3 months in each season as shown below:

SPRING	SUMMER	FALL	WINTER
March	June	September	December
April	July	October	January
May	August	November	February

In what season does each of these days come?

2. Easter
3. Labor Day
4. May Day
5. Halloween
6. Your birthday
7. Christmas Day
8. Fourth of July
9. Thanksgiving Day

10. In what season does your long school vacation come? In what season does Easter vacation come?

Tell the season or seasons when you do these things:

11. go fishing
12. fly a kite
13. gather nuts
14. play marbles
15. rake leaves
16. play baseball
17. play football
18. go ice skating
19. plant a garden
20. send valentines
21. throw snowballs
22. eat watermelons
23. wear an overcoat
24. make jack-o'-lanterns

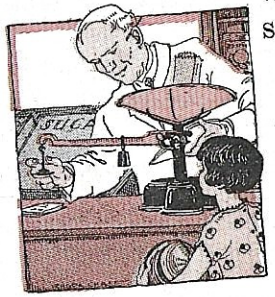
PRACTICE IN MULTIPLYING

Multiply. Check the work by going over it again:

1.	146 × 5	496 × 2	123 × 4	299 × 3	387 × 2	187 × 5
2.	143 × 6	125 × 8	376 × 3	121 × 5	124 × 9	178 × 4
3.	558 × 2	114 × 5	145 × 7	469 × 2	192 × 4	285 × 3
4.	147 × 3	259 × 4	121 × 6	158 × 5	375 × 2	102 × 9
5.	137 × 5	309 × 2	157 × 4	221 × 8	167 × 3	368 × 2
6.	153 × 7	258 × 3	112 × 5	359 × 2	445 × 9	186 × 4
7.	477 × 2	160 × 5	114 × 8	137 × 4	103 × 7	439 × 3
8.	336 × 4	235 × 6	262 × 3	489 × 2	286 × 5	387 × 3
9.	265 × 2	134 × 5	114 × 7	248 × 4	166 × 3	115 × 8

POUNDS AND OUNCES

1. Mary Jane is buying a pound of sugar. Tell which of the things below are also sold by the pound:



bread	eggs
butter	meat
ribbon	milk
coffee	nuts
potatoes	candy
crackers	cocoa

2. If you buy less than a pound of butter, you may buy $\frac{1}{2}$ pound, which is just the same as 8 ounces. $\frac{1}{2}$ lb. means $\frac{1}{2}$ pound. 8 oz. means 8 ounces.

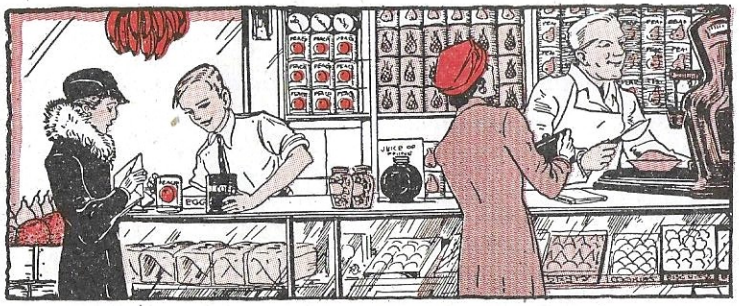
3. If $\frac{1}{2}$ lb. equals 8 oz., how many ounces equal 1 lb.? How many ounces make $\frac{1}{4}$ lb.? 2 lb.?

16 ounces (oz.) = 1 pound (lb.)

4. If Mary Jane buys 3 oz. of butter, does she buy more or less than $\frac{1}{4}$ lb.?

5. When you send a letter to another city, you put 3¢ in stamps on it if it weighs 1 oz. or less. If it weighs 2 oz., you put 6¢ in stamps on it. You pay 3¢ for each ounce that a letter weighs. How much do you pay to send a big letter that weighs 3 oz.?

6. How many pounds do you weigh? Which child in your class weighs the most? How many pounds does your father weigh?



*HELPING FATHER IN THE STORE

Fred helps his father in the store.

1. On Saturday Fred sold Mrs. Green a pound of butter for 33¢, a dozen eggs for 34¢, and a can of peaches for 15¢. How much did Mrs. Green pay for all these things?

2. If Mrs. Green paid Fred with a dollar bill, how much change did he give her? Tell two ways Fred could have made the change.

3. Fred sold Mrs. Smith a box of crackers for 10¢, a half pound of butter for 17¢, and a dozen eggs for 29¢. How much did they all cost? How much change did Mrs. Smith get if she gave Fred $1.00?

4. Mrs. Lee bought a loaf of bread for 9¢, bananas for 25¢, and a can of pears for 15¢. How much change did Fred give her if she gave him $1.00?

5. Last Monday Fred's father bought 96 dozen eggs for the store. On Saturday Fred found 28 dozen eggs left. How many dozen eggs had been sold?

DIVISION FACTS THROUGH 5's

You have learned these division facts. Try to say all the answers in 2 minutes.

1.	$3\overline{)0}$	$4\overline{)4}$	$2\overline{)6}$	$3\overline{)18}$	$4\overline{)16}$	$2\overline{)12}$
2.	$2\overline{)4}$	$3\overline{)9}$	$2\overline{)0}$	$4\overline{)20}$	$5\overline{)30}$	$3\overline{)24}$
3.	$5\overline{)0}$	$2\overline{)8}$	$3\overline{)12}$	$5\overline{)35}$	$2\overline{)18}$	$5\overline{)25}$
4.	$3\overline{)3}$	$4\overline{)8}$	$2\overline{)10}$	$3\overline{)15}$	$5\overline{)10}$	$4\overline{)28}$
5.	$4\overline{)0}$	$2\overline{)2}$	$5\overline{)40}$	$2\overline{)16}$	$4\overline{)24}$	$5\overline{)45}$
6.	$5\overline{)5}$	$4\overline{)0}$	$3\overline{)21}$	$4\overline{)12}$	$2\overline{)14}$	$5\overline{)15}$
7.	$3\overline{)6}$	$5\overline{)0}$	$4\overline{)32}$	$3\overline{)27}$	$5\overline{)20}$	$4\overline{)36}$

WHAT TO DO IF YOU FORGET

1. If you forget a division fact like $4\overline{)36}$, ask this question, "How many 4's make 36?" If you have learned the multiplication facts well, you know that nine 4's make 36. Then $4\overline{)36}$ is 9.

2. You see that the multiplication facts help you to remember the division facts. If you have trouble with the division facts, *first study the multiplication facts on page* 255. Then practice the division facts again. If you forget the answer to a division fact, think the way you did above in ex. 1.

HELPS IN PROBLEM SOLVING

1. An apple costs 3¢. How many apples can you buy for 21¢? for 27¢? for 36¢?

2. Uncle Bob gave Joe, Tom, and Ned 360 stamps. If the boys shared the stamps equally, how many stamps did each boy get?

3. Alice has 35¢. If she spends it all for oranges at 5¢ each, how many oranges will she get?

4. Four girls found 168 nuts in the woods. They divided them equally. How many nuts did each get?

5. The children made 200 pieces of candy to sell at the school fair. They put 5 pieces in each bag. How many bags of candy did they have?

6. Mary and her two brothers paid 99¢ for a present for their father. If the children shared the cost equally, how much did each one pay?

7. Ann's mother gave her 10¢ to buy 2-cent stamps. How many stamps did Ann get?

8. Three boys made 60¢ working together in Mr. Brown's garden. If the boys shared the 60¢ equally, what was each boy's share?

If you know the cost of 1 apple and the amount of money you have to spend, you divide to find how many apples you can buy.

If things are shared equally by several children, you divide to find each child's share.

DIVIDING AND MULTIPLYING

Find the following and check by multiplying:

1.	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 48	$\frac{1}{2}$ of 208	$\frac{1}{3}$ of 300
2.	$\frac{1}{3}$ of 15	$\frac{1}{2}$ of 64	$\frac{1}{4}$ of 160	$\frac{1}{5}$ of 400
3.	$\frac{1}{5}$ of 30	$\frac{1}{3}$ of 36	$\frac{1}{3}$ of 336	$\frac{1}{5}$ of 505
4.	$\frac{1}{4}$ of 12	$\frac{1}{5}$ of 55	$\frac{1}{4}$ of 364	$\frac{1}{2}$ of 688
5.	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 42	$\frac{1}{5}$ of 150	$\frac{1}{3}$ of 150
6.	$\frac{1}{3}$ of 24	$\frac{1}{4}$ of 88	$\frac{1}{5}$ of 350	$\frac{1}{4}$ of 204
7.	$\frac{1}{4}$ of 36	$\frac{1}{3}$ of 96	$\frac{1}{4}$ of 408	$\frac{1}{2}$ of 844

Multiply. Check the work by going over it again:

8.	195 × 4	129 × 5	298 × 2	133 × 8	296 × 3	214 × 4
9.	346 × 2	189 × 3	150 × 6	169 × 4	278 × 3	132 × 9
10.	176 × 4	163 × 5	105 × 8	154 × 6	307 × 3	124 × 7
11.	185 × 5	475 × 2	113 × 7	174 × 5	223 × 9	187 × 2
12.	238 × 4	123 × 6	163 × 3	352 × 2	102 × 5	154 × 3

CAN YOU DO THESE PROBLEMS?

1. George went to the country for 4 weeks. How many days was he in the country?

2. Name some months of the year that have 31 days. Does any month have more than 31 days? Could any month have 4 full weeks? 5 full weeks?

3. How many days are there in May? If the first Saturday in May comes on May 2, what are the dates of the other Saturdays in May? How many Saturdays are there in May that year?

4. After the summer vacation Mary's school begins one week after Labor Day. Labor Day comes the first Monday in September. On what date does Mary's school begin this year?

5. Tom says that he is 4 ft. 3 in. tall. How many inches tall is Tom?

6. Alice is 4 ft. 6 in. tall. Joe is 51 in. tall. How many inches taller than Joe is Alice?

7. Mr. Hill sells ice cream and candy. He buys the ice cream by the gallon and sells it by the quart. He sold 84 qt. of ice cream last week. How many gallons of ice cream did he sell?

8. What time is it when the long hand of the clock points to 6 and the short hand is between 9 and 10? What time is it when the long hand points to 12 and the short hand points to 6?

BUYING THINGS FOR MOTHER

1. Billy went to the store this morning and bought a dozen eggs for his mother. How many eggs are there in a dozen?

2. Billy also bought a half dozen rolls. How many rolls make a half dozen? How many are $\frac{1}{2}$ of 12 rolls?

3. The rolls cost 18¢ a dozen. How much did Billy pay for $\frac{1}{2}$ dozen rolls?

4. The eggs cost 42¢ a dozen. How much did Billy pay in all for the dozen eggs and the $\frac{1}{2}$ dozen rolls?

5. In ex. 4, was a half dollar enough to pay for the eggs and the rolls? If Billy gave the clerk 2 quarters and a dime, how much change did he get?

6. This afternoon Billy bought some more eggs. This time he bought only $\frac{1}{2}$ dozen eggs. How much did he pay for them if 1 dozen cost 42¢?

7. How many eggs make $\frac{1}{4}$ dozen? How much would $\frac{1}{4}$ dozen eggs cost at 40¢ a dozen?

8. If rolls cost 15¢ a dozen, how much would Billy pay for 2 dozen rolls? for 3 dozen rolls?

PROBLEMS WITHOUT NUMBERS

Tell whether you would add, subtract, multiply, or divide to get the answer:

1. If you know how much money you have and the price of a book that you are going to buy, how do you find how much money you will have left?

2. If you know the number of miles your father drove his car each day last week, how do you find the number of miles he drove in all?

3. If you know how many apples you bought and how much in all you paid for them, how do you find the cost of one apple?

4. If you know the number of dollars a coat costs and also the number of dollars you now have, how do you find how much more money you need in order to be able to buy the coat?

5. If you know the number of inches in a foot, how do you find the number of inches in several feet?

6. If you know the cost of each thing you had for lunch to-day at school, how do you find the cost of your whole lunch?

7. If you know the cost of the Christmas present three children want to give their mother, and also that they will share the cost equally, how do you find each one's share of the cost?

8. If you know the cost of one circus ticket, how do you find the cost of several tickets?

MIXED PRACTICE

1. How many days are there in 21 weeks?
2. How many birds are 25 birds less 9 birds?
3. Find the sum of 46, 83, 49, 20, and 37.
4. Find the difference between 280 and 135.
5. How many times is 6 contained in 306?

Find the answers to the following:

6. $4 \times 371 = ?$
7. $\frac{1}{5}$ of $155 = ?$
8. $276 \div 3 = ?$
9. $639 - 193 = ?$
10. $29 + 6 + 10 = ?$
11. Divide 164 by 4.
12. From 900 take 48.
13. Multiply 247 by 2.
14. Add 436 and 706.
15. Subtract 39 from 106.

PRACTICE IN MULTIPLYING

Multiply. Check the work by going over it again:

1.	164 × 3	179 × 2	124 × 5	171 × 4	155 × 6	264 × 2
2.	105 × 9	279 × 3	138 × 5	358 × 2	122 × 7	235 × 4
3.	147 × 5	467 × 2	120 × 8	188 × 4	285 × 3	180 × 5
4.	320 × 3	192 × 5	165 × 4	480 × 2	156 × 3	209 × 4

DIAGNOSTIC TEST

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Add the following and check the work:

							HELP PAGES
1.	26 53 34 32	24 95 23 43	44 67 35 34	97 45 52 18	86 56 42 44	78 61 18 17	141, 152 217, 251
2.	476 237	315 215	291 664	539 183	270 230		159, 233

Subtract the following and check the work:

3.	468 425	759 374	726 518	924 475	700 176	252

Multiply the following and check the work:

4.	308 × 3	121 × 8	118 × 5	374 × 2	218 × 4	246, 256
5.	172 × 5	197 × 4	143 × 6	265 × 3	465 × 2	259–261

Divide. Check the work by multiplying:

6.	$4\overline{)280}$	$2\overline{)648}$	$5\overline{)305}$	$3\overline{)306}$	225, 272

PROMOTION TEST

If you can do all these things, you are ready to go into the next grade:

1. Say the answers to the 100 addition facts on page 32 in 3 minutes; to the 100 subtraction facts on page 39 in 3 minutes; to the multiplication facts on page 255 in 3 minutes; and to the division facts on page 270 in 2 minutes.

2. Count by 2's to 100. Count by 3's to 48.

3. Make change from \$1.00 for 17¢, 35¢, and 78¢.

Add the following and check the work:

4.	194	229	\$6.39	\$2.75	\$1.75
	625	686	2.05	1.84	2.45
	453	971	1.76	1.67	3.89

Subtract the following and check the work:

5.	546	859	\$7.60	\$9.77	\$8.00
	243	297	6.58	3.89	7.45

Multiply the following and check the work:

6.	78	304	\$1.51	\$2.15	\$1.24
	2	3	5	4	7

Divide the following and check the work:

7.	$4\overline{)168}$	$3\overline{)270}$	$2\overline{)184}$	$5\overline{)505}$	$3\overline{)696}$

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